68TH CONGRESS, 1st Session | HOUSE OF REPRESENTATIVES | DOCUMENT No. 61

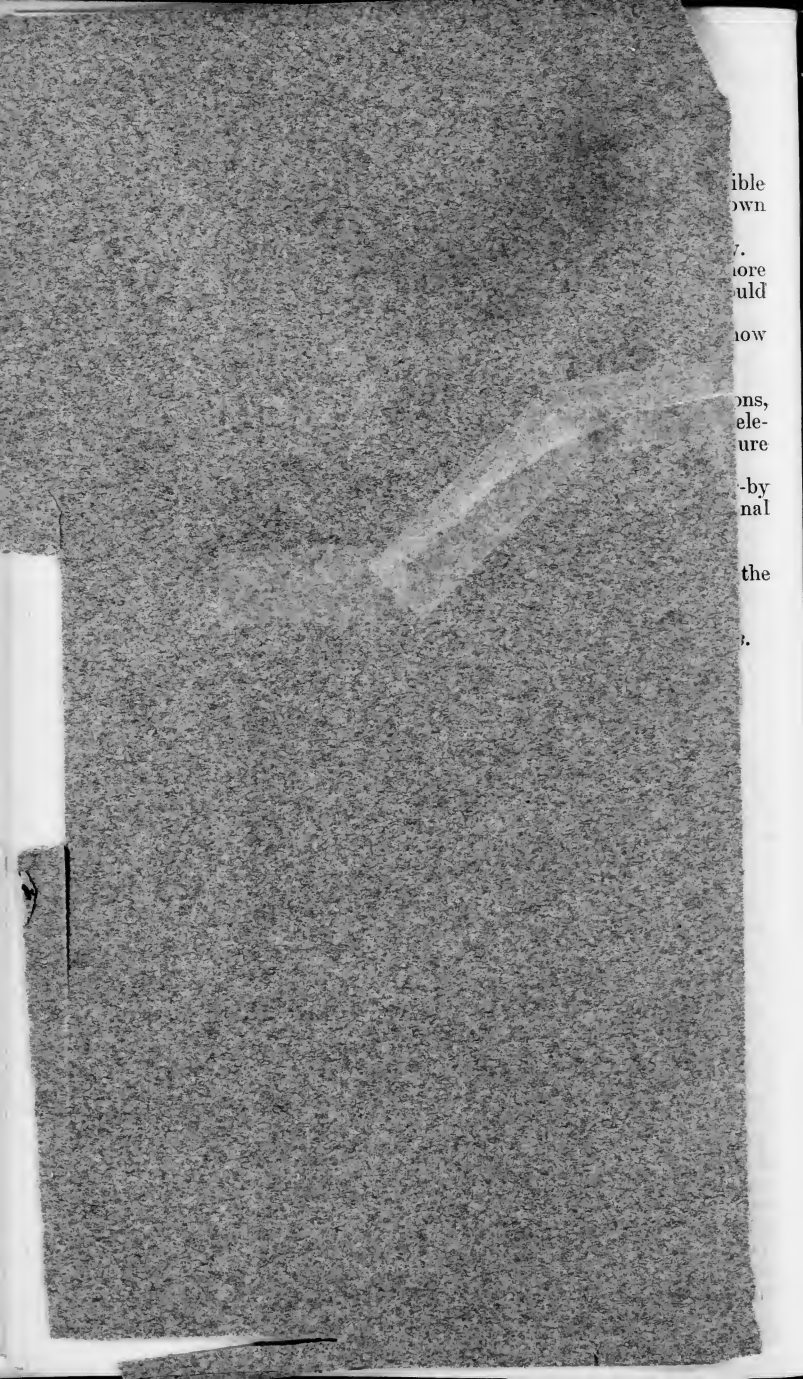
ANNUAL REPORT OF THE COMMISSIONERS OF THE DISTRICT OF COLUMBIA

YEAR ENDED JUNE 30, 1923

Vol. II

ENGINEER DEPARTMENT REPORTS

WASHINGTON
GOVERNMENT PRINTING OFFICE
1923



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EXTRACT FROM REPORT OF THE COMMISSIONERS OF THE DISTRICT OF COLUMBIA FOR THE FISCAL YEAR ENDED JUNE 30, 1923.

OFFICE OF THE COMMISSIONERS
OF THE DISTRICT OF COLUMBIA,
Washington, December 3, 1923.

To the Senate and House of Representatives of the United States of America in Congress assembled:

The Commissioners of the District of Columbia herewith submit for the information of Congress, pursuant to the requirements of section 12 of an act providing a permanent form of government for the District of Columbia, approved June 11, 1878 (20 U. S. Stats. 108), a report of the official doings of that government for the fiscal year ended June 30, 1923.

* * * * * * *

ROADWAY PAVEMENTS.

The accompanying table shows the area in square yards of new roadway pavements laid and old roadway pavements resurfaced during the year, with the totals in square yards and miles of the various kinds of pavements at the close of the fiscal year.

Comparative statement showing character and extent of roadway pavements.

	Existing amount on June 30, 1922.		New pavement laid during year, square yards.	Pavements replaced during year, square yards.	Existing amount on June 30, 1923.	
	Square yards.	Miles.			Square yards.	Miles.
Sheet asphalt and coal tar	3,422,397	182.21	21,079	.....	3,443,476	183.36
Asphalt blocks	612,205	31.11	.....	.....	612,205	31.11
Asphaltic surface	.....	.....	44,996	.....	44,996	3.12
Durax blocks	17,968	.57	.....	.....	17,968	.57
Asphaltic or bituminous concrete:						
On concrete base	78,708	4.58	.....	.....	78,708	4.58
On stone base	51,088	2.68	.....	[3] 4,882	46,206	2.47
Cement concrete	261,705	14.07	42,506	.....	304,211	16.35
Granite block and rubble	357,190	19.54	.....	[1] 688 [2] 21,897	334,605	18.35
Vitrified block	17,390	1.04	.....	.....	17,390	1.04
Cobble	36,374	1.52	.....	.....	36,374	1.52
Macadam (estimated)	1,874,310	120.58	.....	[1] 9,461 [2] 23,099 [3] 5,524	1,836,226	117.76
Gravel and unimproved (traveled)	.....	149.34	.....	.....	.....	156.51
Gutters on asphalt streets	241,364	.....	1,553	.....	242,917	.....
Pavements maintained by street railways	564,525	.....	3,509	.....	568,034	.....
Gutters on asphaltic concrete streets	11,201	.....	.....	[3] 611	10,590	.....
Total	7,546,425	527.24	113,643	66,162	7,593,906	536.74

[1] Sheet asphalt. [2] Asphaltic surface. [3] Cement concrete.

The sums appropriated for expenditures during the year under this head were as follows:

For repairing old roadway pavements, including asphalt resurfacing	$460,000
For paving new roadways	233,500
For repair of suburban roads	250,000
For grading streets, alleys, and roads	35,000

The prices paid under contracts for roadway pavements during the year were as follows:

Laying sheet-asphalt pavement (2½-inch asphalt surface, 2-inch binder, before compression) with 6-inch concrete base:	
Class A—Natural pitch lake asphalt	$3.21
Class B—A reduced oil asphalt	3.11
Laying vitrified block with 6-inch concrete base	3.21
Laying 6-inch concrete roadway	1.87

Unit costs of contract work showed no recession, except as to concrete roadways. Funds for paving roadways were quite inadequately provided and this fact, with the continued development of new streets by builders. created a situation little short of deplorable.

A fund of $50,000 provided this year for the paving of roadways on deposit by the property owners of one-half the cost was entirely consumed. At the end of the year all work appropriated for had been completed, except two small items which were approaching completion under contract.

A special asphalt-surface mixture, designed by Major Besson, was laid somewhat experimentally on certain granite-block roadways and certain fairly heavily traveled suburban macadam roadways as a part of the year's work.

SUBURBAN STREETS AND ROADS.

The work of repairs to suburban roads consisted almost entirely of maintenance of the suburban road and street system and of roadways on unimproved streets where buildings had recently been erected. Repairs to the macadam roads were made principally by patching with bituminous materials and stone. Bituminous surface treatment was given to about 652,000 square yards of macadam roads at an average cost of about 6 cents per square yard. In this treatment there were used 83,179 gallons of road oil, 72,860 gallons of tar, and 8,000 tons of gravel and stone chips. Previous recommendations for paving the principal trunk highways to the District line as rapidly as funds can be provided and for legislation limiting the weights of loaded vehicles are renewed.

MUNICIPAL ASPHALT PLANT.

The District of Columbia has operated a portable municipal asphalt plant in the repair of asphalt pavements and bituminous macadam roadways for the past 12 years. During the year 1923 the plant was operated for a period of 247 days, with a total output of 211,500 cubic feet of material, or an average daily output of 856 cubic feet. Additional asphalt material for street repairs supplemental to that furnished by the asphalt plant was purchased under contract from the Cranford Co. to the amount of 6,103.20 cubic feet.

The details of the cost of the operation of the plant are contained in the report of the engineer of highways.

SIDEWALKS AND ALLEYS.

The sum of $250,000 was appropriated for paving sidewalks and alleys in all parts of the District and the sum of $15,000 for laying sidewalks and setting curbs around Government buildings, reservations, and parks. Sidewalks are paved with cement concrete under contract, while alleys are paved with cement concrete by day labor forces.

One-half of the cost of curb, sidewalk, and alley pavement is assessed against the abutting property, except that abutting public buildings and public reservations. The contract for laying sidewalks during the year was as follows:

For large jobs adjoining paved streets, per square yard, exclusive of grading	$1.63
For large jobs adjoining unpaved streets and for small jobs, per square yard, exclusive of grading	1.80

BRIDGES.

The expenditures from the appropriation for the construction and repair of bridges amounted to $24,890.97, and there is an obligation of about $2,300 on contract 7737 for reconstruction of Kenilworth Avenue culvert.

The appropriation for Anacostia and Highway Bridges were expended practically in full.

Contract with the Allen H. Rogers Co. for construction of nine reinforced concrete stalls at the District stone trestle completed at a cost of $11,579.57.

Contract with Royal J. Mansfield for construction of 12 reinforced concrete bins at the District stone trestle completed at a cost of $15,062.60.

Contract with Royal J. Mansfield for repairs to Calvert Street Bridge over Rock Creek completed at a cost of $20,221.09.

Contract with the Cambridge Manufacturing Co. for construction of reinforced concrete wharf deck at Wharf No. 6 completed at a cost of $14,665.69.

Contract entered into with the Pamfilis Constructing Co. for painting three spans of the Anacostia River Bridge. Work is in progress.

Contract entered into with the William F. Cush Co. for reconstruction of culvert in line of Kenilworth Avenue NE., north of Benning Viaduct. Work is in progress.

INSPECTION OF ASPHALTS AND CEMENTS.

Through this office, tests, chemical and physical, are made of materials used in street and road improvements, likewise all cements used in buildings and in sewer construction, fuel oils used at the municipal asphalt plant, and miscellaneous tests of any materials requiring such. Complete tests made during the year were: Asphalt materials, 881; oils, 16; pitch, 3; tars, 3; sand, 90; gravel, 70; stone, 35; limestone dust, 21; cements, 8,946, representing 89,468 barrels; miscellaneous materials, 2,951; total, 13,016.

The samples of asphalts tested represent 2,008 tons, 1,270 tons used by contractors for laying roadways and 738 tons used at municipal asphalt plant in producing paving materials.

Of the materials tested there were rejected 2,155 cubic yards of sand and 1,600 cubic yards of gravel.

SURVEYOR'S OFFICE.

The work of this office is divided into three classes:

1. Work done for private parties for which a fee is charged, the amount charged being regulated by schedule of fees approved by the commissioners.

2. Work done for the various coordinate departments of the District of Columbia and for the Federal Government, no fee being charged for this class of work.

3. Surveys, descriptions, and preparation and report covering all condemnation cases for streets, alleys, and parks.

The first class of work, or private work, for which a fee is charged, has greatly increased over any previous year. This increase has been continuous since the close of the war, and has grown to such proportions that the present office force can not perform the work promptly for the public.

The number of lots, or parts of lots, surveyed during the past year was 6,065, while those of the previous year numbered 5,043; surveys to verify walls under construction for the past year 1,893, previous year 1,700; number of lots inspected where new buildings are being erected for the past year 3,305, previous year 3,022; number of lots created by subdivision during past year 4,632, previous year 3,878; estimates or orders for work to be done past year 12,659, previous year 11,320; number of plats prepared for private parties during past year 10,308, previous year 8,658; total number of surveys during past year 5,122, previous year 4,135; total number of plats drawn the past year 14,669, previous year 12,100.

This shows an increase in all classes of work in this office for the fiscal year ended June 30, 1923, over the year ended June 30, 1922.

The total receipts for the past fiscal year ended June 30, 1923, amounted to $48,461.90, against $40,503.80 for the previous fiscal year ended June 30, 1922. The amount collected during the past year is in excess of the appropriation for the maintenance of the office, although it has never been assumed that this office should be self-sustaining.

HIGHWAY PLAN.

The appropriation of $2,000 for marking permanently on the ground the permanent system of highways has been expended in running out street lines and marking block corners by permanent monuments. About 125 granite monuments have been placed at different parts of the District to mark the street plan, some of the important streets marked being Alabama Avenue, Benning Road, Forty-sixth Street, Division Avenue, Sheriff Road, and South Capitol Street.

This appropriation has been advantageously expended and should be continued.

Changes in the highway plan can be made after plans providing for such changes are drawn up by the commissioners and approved by the highway commission composed of the Secretary of War, the Secretary of the Interior, and the Chief of Engineers, United States

Army, with certain other legal requirements to be carried out by the commissioners of the District.

Several such changes have been made during the past year and are now of record in the surveyor's office, as follows: (1) Seventeenth Street between Blagden Avenue and Colorado Avenue NW., (2) Crittenden Street between Sixteenth Street and Seventeenth Street NW., (3) Alabama Avenue between Thirty-first Street and Pennsylvania Avenue SE.; Austin Street, east of Thirty-second Street SE.; Suitland Road south of Bowen Road, SE.; and (4) Alabama Avenue (Hamilton Road) between Twenty-second Street and Twenty-fourth Street SE.

SUBDIVISIONS.

The great building activity going on throughout the District has been the cause of the greatly increased number of subdivisions recorded in the surveyor's office. During the year the subdivision regulations were revised, approved by the commissioners and published in pamphlet form.

The number of subdivisions prepared during the past fiscal year was 537, this being an increase of 55 over the previous year. The number of subdivisions recorded was 496, an increase of 26 over the previous fiscal year.

CONDEMNATION CASES.

During the past fiscal year there were before the courts 42 street and park condemnation cases and 17 alley cases; 23 new condemnation street and park cases were filed in court, and 12 new alley cases; 13 street and park cases and 9 alley cases were confirmed by the court. The magnitude of this class of work will be shown by the fact that the total amount of damages allowed for the property taken for streets, parks, etc., was $130,730.39, and the amount allowed for alleys $14.979.64.

The following were some of the important condemnation cases considered during the past fiscal year: Establishment of building restriction lines on Kalorama Road, Wyoming Avenue, Thirteenth and Fourteenth Streets, and the opening of Legation Street, Eastern Avenue, Fifteenth Street, Hamlin Street, Southern Avenue, Jenifer Street, Forty-second Street, Fourteenth Street, streets in Barry farm (east of Nichols Avenue), Ninth Street, Underwood Street, Tuckerman Street, and many others.

Some criticism has been made to opening streets by condemnation in which the entire cost is assessed as benefits because of the necessary delay in making streets physically usable, but it is believed the law has been a great benefit in developing the District in an orderly, comprehensive way.

The erection of improvements has prevented the opening of many important streets, as the assessment for benefits in such cases is so great the property owners could not equitably stand the assessments. In such cases there should be an appropriation to bear part of the cost. Many localities have been retarded in development by reason of streets being thus blocked, and the sooner some provision is made for opening these streets the better it will be for the development of the street plan and the orderly growth of the city.

PARKS.

The L'Enfant plan of the Federal city of 1791 provided for a magnificent street and park plan. This plan stopped at Boundary Street (now Florida Avenue), beyond which there is no park plan, and if provision is not made for the acquisition of land for parks over this area there will be a great lack of parks through the outlying sections. There are many beauty spots where magnificent trees exist which should be acquired before the rapid development of the city destroys them.

The surveyor's office has from time to time recommended specific tracts for parks, where there is danger of their being lost for park purposes. These are Piney Branch Parkway, east of Sixteenth Street, Klingle Road Valley, and Patterson tract. Attention is especially called to rapid encroachment up Piney Branch and Klingle Road Valley. These sites have already been reduced in area, and it is believed that Piney Branch Parkway will be lost if not acquired within the next year.

Klingle Ford Valley should be made the link connecting Potomac Park on the south with Rock Creek Park on the north. This would eliminate the necessity of traffic passing through Zoological Park, which is a playground for children, where traffic should be restricted.

CIVIL WAR FORTS.

Steps should be taken to preserve the 40 or more fort sites and batteries constructed for the defense of Washington during the Civil War. Some of these sites have already been destroyed by progress of improvements, but some are still well preserved. All are of great historic interest. Beautiful boulevards on high ground overlooking the city should be constructed connecting these sites.

SMALL PARKS.

Many small park areas have been acquired under the appropriation for this purpose. This appropriation has been reduced from time to time from $25,000 to $5,000 for the current fiscal year. The acquisition of these small areas frequently prevents the construction of some cheap and unsightly improvements, and is a matter of great importance, and the appropriation should be increased and continued.

There were 24 small park cases before the courts for condemnation during the past year, some of which have been confirmed.

STREET PARKING.

Some study should be given to the question of a uniform treatment for parking space within the street lines of the residential districts.

A specific case in this connection is the parking along Sixteenth Street. The title to this land is in the Federal Government, under the jurisdiction and control of the commissioners. The property owner has the benefit of the parking area in his front yard, for which he pays no rent or taxes. It is thought that this area should be beautified and the appearance of the residential streets much im-

proved. At present all kinds of treatment of these parking areas can be seen. Some are on terraces and some without terraces, and some have fences and hedges and others are without them. It is believed that each block should be similarly treated and the appearance of the city thereby much improved.

To accomplish this result legislation would probably be necessary and an initial appropriation needed, after which it might be reimbursed by assessment against the abutting property owners similar to the establishment and maintenance of sidewalks.

TREES AND PARKING.

The number of trees along the curbs on the streets of the District of Columbia at the close of the fiscal year was 104,593. Only 58 trees were planted in their permanent positions on the streets during the year, as the planting of trees on the streets had to be abandoned, due to the loss of two tracts of ground which had been used as tree nurseries for a number of years.

The nursery at Fort Dupont is still being used for the propagation of trees for street planting. Two hundred and eighty-seven elm, 17 Norway maple, 62 red maple, and 105 sugar maple seedlings were planted in the nursery rows at the Fort Dupont site.

In September, 1922, the Chief of Engineers, United States Army, granted permission to the Commissioners of the District of Columbia to use a tract of the reclaimed ground along the Anacostia River, immediately upstream from Bolling Field. Twelve hundred elm, 173 pin oak, and 700 red oak seedlings were set out in the nursery rows at the last-named tract of ground.

The systematic trimming of trees was resumed during the year, and commencing at Eighteenth Street NW. as the eastern limit, with B Street and Florida Avenue as the south and north boundaries, the work was continued westward to and including all streets in Georgetown. In addition to the systematic trimming a small force of men accomplished much trimming upon individual requests. There was a noticeable increase in the number of requests received from individuals for trimming trees throughout the city. The total number of trees trimmed during the year was 12,667.

The sum of $4,793.11 was expended during the year to remove weeds from uninclosed public parkings along the streets of the city. One thousand, three hundred and fifty-five permits were issued to regulate the grade of the parking in connection with building operations.

The purchase of ground for a permanent tree nursery would be a most desirable step in point of economy, after consideration of the fact that two nurseries have recently been abandoned, and that there is no assurance as to the length of time we can occupy the ground we are now using to propagate trees for planting along the thoroughfares of this city. The rapid growth of the city makes it almost imperative that consideration be given toward legislation in order to obtain an appropriation to purchase a permanent nursery site.

COLLECTION AND DISPOSAL OF CITY REFUSE AND STREET AND ALLEY CLEANING.

The outstanding and interesting feature of the work done by the city refuse division was the amount of money returned into the Treasury from products sold. There was received from garbage grease and tankage and from salvaged material a total of $356,172.40. This exceeded anything done in previous years. This revenue is accounted for by the large amount of garbage handled and by the good prices received for grease and baled paper.

The appropriation for the collection and disposal of city refuse was $800,000, so that the return was 44½ per cent of this sum, or the actual expense of collecting and disposing of all city refuse (other than street-cleaning material) was slightly less than $444,000.

The collection and disposal of 145,432 cubic yards of ashes was a total loss with no salvage, except in so far as certain streets and alleys were improved by the deposited ashes in them, and cost $117,727.67. The amount paid to contractors for the collection and disposal of night soil and of dead animals was $20,860. Salaries not allocated to any particular service were $8,940. So that the expense of the collection and disposal of garbage and trash was $641,449.81.

The appropriation for dust prevention, cleaning of streets and alleys, was $375,000.

During the winter there were three light snows, which gave the department the opportunity to try out the snow law enacted by Congress at the previous session. When the sidewalks were not cleaned by the occupant of the abutting property, the work was done by the District. The expenditure by the city refuse division from the appropriation of $10,000 under this act was $6,832.08.

BUILDING OPERATIONS.

The estimated value of building construction, including repairs, during the year was $57,638,638, an increase of $21,441,579, as compared with the fiscal year 1922.

The number of permits issued was 12,191, an increase of 1,890 over the previous year. This is the greatest number of permits ever issued for any fiscal year by the building division. The total number of business buildings erected was 937, a decrease of 116. There were 3,478 new buildings, a decrease of 32. The number of apartments erected was 81, an increase of 21; 2,460 dwellings, an increase of 63. There were 5,938 permits granted to repair, an increase of 615.

During the past year there were issued 2,585 conforming certificates of occupancy and 118 nonconforming certificates, the fees therefor totaling $3,523.50, as compared with $3,305.50 for the year 1922.

Attention is invited to the fact that the receipts of this bureau for the fiscal year were $70,403.48; the salaries amounted to $54,998.98, a difference of $15,404.50. This increase of receipts above expenses indicates to a marked degree the additional labor imposed upon the employees, and should dictate, it is believed, a corresponding increase in salaries.

CONSTRUCTION OF MUNICIPAL BUILDINGS.

During the year 18 buildings were under construction as follows: A 4-room addition to the Monroe School, which was completed August 12, 1922; a 4-room addition to the Deanwood School, completed August 15, 1922; a 12-room addition to the Wheatley School, completed October 28, 1922; an 8-room addition to the John Eaton School, completed October 28, 1922; an 8-room addition to the Lucretia Mott School, completed August 12, 1922; an 8-room building known as the Richard Kingman School, completed October 2, 1922; an 8-room addition to the Buchanan School, completed October 28, 1922: an 8-room building to replace the Bell School, completed March 3, 1923; the construction of the superstructure of the new Eastern High School, which was completed December 9, 1922; the Smothers School, which will probably be completed about September 22, 1923; the addition to the Lovejoy School, which will probably be completed about October 16, 1923; the Garrison School addition, which will probably be completed about November 30, 1923; the George Bancroft School, which will probably be completed about January 11, 1924; the Langley Junior High School, which will be completed about November 1, 1923; the Macfarland Junior High School, which will probably be completed about November 1, 1923; the Chain Bridge Road School, which will probably be completed about October 12, 1923; the construction of a head house on Wharf No. 6. and the erection of new police station No. 12.

Preliminary studies for the home for the feeble-minded have been made and a general program mapped out.

Besides the preparation of plans and specifications for the above buildings, plans and specifications for about 40 other pieces of work, such as heating systems in engine houses, cells, and other work in police stations, repairs to heating systems in school buildings, etc., were prepared in this office, amounting to $63,458. The contracts entered into by this office for the fiscal year amounted to a total of $1,498.377.

REPAIRS TO MUNICIPAL BUILDINGS.

All municipal buildings are kept in repair under the direction of the municipal architect. During the year only such repairs were made as would prevent further deterioration of the structures, as the continuation of high wages and high prices of materials prevented the doing of more extensive repair work with the funds that were available.

The appropriations for repair work and the expenditures of same were as follows:

For the repairs to school buildings: $250,000 was appropriated, and all was expended but $221.90.

For repairs to engine houses: $20,000 was appropriated, and all was expended but $16.74.

Repairs to stations: $7,000 was appropriated, and all was expended but $4.30.

Repairs to police court building: $2,000 was appropriated, and all was expended but $14.20.

In addition to the above, repairs were made on various buildings under the supervision of the superintendent of repairs to the amount of $114,655.55 out of appropriations controlled by other departments.

Steam boilers in 100 District buildings were inspected and repaired.

WORKHOUSE AND REFORMATORY.

The work at the workhouse and reformatory during the past year has been quite satisfactory. Five shops, two washhouses, two disciplinary wards, and one dormitory building have been completed and the foundations of two additional wards started. Plans are being made for the domestic building.

Considerable progress has been made on the industrial railroad at Lorton; the grading is practically completed, and nearly a half mile of track has been laid.

THE DISTRICT BUILDING.

The District Building was cared for by the various units of this department. There were consumed 2,017 tons of coal, which averaged 13.8 per cent ash. There were removed 537 cubic yards of ashes, at a cost of $267.61. Repairs made in the power plant included rebuilding two smoke-consuming arches and rebuilding No. 2 stoker. There were purchased two Sangamo watt meters, one new turbine head, and two sets of pins and cutters for boring boiler tubes. Electric current generated amounted to 485,740 kilowatt hours. The electrical department renewed the drum counterweight cables on six passenger elevators and made the usual repairs and installations. The print shop completed work amounting to $7,547.51, and the photograph and blue-print shop $2,891.30. The woodwork and paint shop repainted the walls and ceilings of 27 rooms, in addition to the refinishing of floors and general repairs. It is again recommended that additional floor space be acquired to relieve the congestion in the offices.

MUNICIPAL GARAGE.

For the fiscal year ended June 30, 1923, the municipal garage maintained and kept in running condition 44 automobiles. A laboring mechanical force of eight men made the necessary repairs and operated automobiles for departments having no drivers. The garage was kept open night and day, all machines being washed and supplied with oil and gasoline by the night force, who also served as watchmen.

The electric light wiring of the garage was uncovered and found defective, and it was deemed necessary to rewire the entire garage.

The total operating expense for the maintenance of the 44 automobiles, including gasoline, oil, tires, labor, and miscellaneous supplies, amounted to $18,038.64, or an average of $409.96 for each car, or $0.0731 per mile. The average mileage per car was 5,602.3 miles.

PLUMBING AND PLUMBING INSPECTION.

During the year the plumbing division made 42,467 regular inspections in the field, as compared with 38,105 the preceding year. The increase in the number of inspections was due in part to the increase in building construction during the year and in part to the increase in the number of complaints received by this office of insanitary plumbing in old houses or defective downspouts and gutters. The average number of inspections per day per man was 15, and the greatest number in any one day was 35.

It is estimated that the total cost of new plumbing work installed in private buildings was $3,397,074, and of repairs and remodeling work $2,072,772. No record was kept of the large amount of plumbing work done under the officers in charge of such work in the general Government buildings.

There were nine cases prosecuted in police court, and a total of $95 was collected in fines.

Of the 151 cases prosecuted under the drainage and nuisance acts for failure to connect with sewer or make necessary repairs, in 27 cases the work was done by the District and the cost thereof assessed against the property. There are 10 cases still pending under notice, and the balance were disposed of through the owner or agent doing the work or otherwise.

PLUMBING BOARD.

There were 24 sessions of the board for examining candidates for licensing as master plumbers and gasfitters. The total number of candidates examined was 72; the number of original candidates examined for licenses was 15, of whom 3 passed; and of the 57 who had been previously examined for licensing, 15 passed and 42 failed.

PUBLIC-CONVENIENCE STATIONS.

There were four stations in operation throughout the year, open from 6 a. m. until midnight, with two shifts of attendants, each working nine hours per day. The total patronage of the stations was about 12,500,000. The cash receipts for the year amounted to $8,441.12, and consisted of 5-cent fees received for use of pay toilets, rental of clean towels, and commissions received on telephone service, bootblack stands, etc.

INSPECTION OF STEAM BOILERS.

The number of steam boilers inspected by the inspector of steam boilers during the year was 460, including 35 belonging to the District of Columbia. Six boilers were condemned as unfit for further use. The compensation of the inspector of steam boilers is paid from fees collected from private owners of boilers. The total amount of fees reported by that official was $2,300, and the expense of inspection $325, leaving a net compensation of $1,975.

EXAMINATION OF STEAM ENGINEERS.

The board of examiners of steam engineers held 52 meetings and examined 262 applicants, of whom 143 were found competent and 119 incompetent.

STREET LIGHTING.

There are 21,256 public lamps of all kinds in the avenues, streets, alleys, etc., under the jurisdiction of the Commissioners of the District of Columbia, as follows:

Gas, mantle:		
Single burner	10,759	
Double burner	152	
		10,911
Electric, arc:		
6.6-ampere magnetite	283	
4.0-ampere magnetite	504	
		787
Electric, incandescent:		
600-candlepower, series	51	
400-candlepower, series	2	
250-candlepower, series	168	
200-candlepower, multiple	64	
100-candlepower, series	4,087	
100-candlepower, multiple	98	
60-candlepower, series	4,179	
60-candlepower, multiple	293	
		8,942
Street designation:		
Gas	405	
Electric	211	
		616
Total		21,256

There was a net increase during the year of 548 lamps.

The increase in aggregate candlepower of the street lighting system under the jurisdiction of the commissioners is from approximately 1,752,100 to approximately 1,848,300, less than 5.5 per cent; but 62 lamps, aggregating 32,300 candlepower, accrued by transfer of juisdiction, leaving the actual increase less than 3.7 per cent.

Four 4-ampere magnetite arc lamps were added, including two at north approach to Francis Scott Key Bridge; 37 incandescent lamps replaced gas lamps on East Capitol Street at and near new Eastern High School; 39 incandescents replaced gas in Fifteenth and Seventeenth Streets, K Street to Massachusetts Avenue, to effect relief of traffic situation in Sixteenth Street; small temporary installations were made on improved posts for observation, experimental, and test purposes; the remainder of the additions were in lots of six or less, widely scattered, to partly meet the demand in newly built-up suburban sections.

The street lighting, as a whole, is distinctly inadequate, and a comprehensive material improvement should be inaugurated at once.

The situation with respect to the several suits at law against certain railway companies for recovery of sums expended in maintaining lights adjacent to their respective rights of way remains essentially as stated in 1920 and succeeding reports.

SIGNAL SYSTEMS—FIRE ALARM TELEGRAPH, POLICE PATROL SIGNAL AND TELEPHONE SERVICE.

There were 782 fire-alarm boxes in service at the end of the year, 663 on underground and 119 on overhead wires, a net increase of 43 over the preceding year; 1,266 box fire alarms and 1,560 local alarms

were received and transmitted during the year, of which 156 box and 54 local were false. The number of box circuits in commission has been increased by 5, to 35, and redistribution made, relieving the more seriously overloaded.

There were 490 police-patrol boxes in service at the end of the year, 385 on underground and 105 on overhead wires, an increase of 3 over the preceding year.

There were 1,550 telephones connected to the District system at the end of the year, and 28 in use as portable sets by fire and electrical departments, an increase of 97 in the year.

The number of cells of storage battery in service on fire-alarm, police-patrol, and local circuits remains unchanged at 2,174.

There were in service on the composite signals system (fire alarm, police, and telephone) on June 30, 1923, 172.97 miles of underground cable, containing 6,902.60 miles of conductors, and 178.45 miles of aerial conductors, a grand total of 7,081.05 miles of conductors, a net increase of 446.20 miles of conductors. Reserve capacity of cables is below requirement of demand and below safe emergency provision. Provision for expansion is again presented as an urgent requirement.

ELECTRICAL INSPECTION.

The total number of permits issued for installation of wires and apparatus for electric light, heat, and power purposes on private premises, not including distribution or other plants of public-service companies, during the year, was 9,791, compared with 8,029 in the preceding year, representing approximately 9,271 kilowatts capacity of utilization equipment. The total sum in fees paid for permits was $16,164, compared with $13,861. The annual increase of service to be rendered continues, and neither adequate nor satisfactory service can be rendered with the number of inspectors engaged.

Supervision was exercised over the erection, taking down, and moving of an aggregate of 1,555 line and 186 guy poles, and 591 pole-guy anchors, and of the stringing of overhead wires in streets and other public spaces. The total of recorded wire-supporting poles in the District at the end of the year was: Line, 20,612; guy, 1,347; total, 21,959; compared with a total of 20,914 at the end of the preceding year, a net increase of 1,054 compared with 912 and 348 for the next two preceding years, indicative of the continuance of the exceptional activity in suburban development. There has been no increase in the number of telephone poles in streets and avenues within "the prescribed area" of the act of Congress regulating the use of telephone wires in the District of Columbia, approved June 30, 1902.

MISCELLANEOUS.

The electrical department has cooperated with the municipal architect and other District officers, consulting and counseling, preparing plans, specifications, and estimates, and supervising electrical work. This service has been exceptional in extent, due to activities in school building and improvement.

HARBOR FRONT.

The annual rental of the wharves on that part of the river front under the control of the commissioners as of June 30, 1923, follows:

Washington Channel	[1] $22,763.38
Anacostia Channel	400.00
Georgetown Channel	848.00
	34,011.38

The actual water frontage of the District of Columbia devoted to commerce, with the exception of canals, is about 2 miles. The total available water front is 18 miles, of which about 8 miles is set aside for parks and for other purposes of the United States. The largest amount of wharf property under the control of the commissioners is along the Washington Channel.

The new harbor police station and dock, the dock of the fire boat, the District morgue, the municipal fish wharves and market, and the District workhouse and sand wharves are located on the Washington Channel between the south curb line of N Street and Thirteenth Street. The balance of the frontage is leased by steamboat companies, boathouses, lumber dealers, etc.

A more noteworthy project than one which would give the National Capital a useful and attractive water front could not be initiated. Civic organizations, municipal officials, and others have been advocating an improvement in the Washington water front for many years, and, notwithstanding the present policy of economy in governmental expenditures, it is believed that initial funds for this purpose should be appropriated in the near future and additional funds provided progressively each year until the project has been completed.

SEWERAGE AND SEWAGE-DISPOSAL SYSTEMS.

The construction and maintenance of the sewerage system and the sewage-disposal system of the District of Columbia is placed under a division in charge of the sanitary engineer.

The length of main and pipe sewers constructed during the year was 12.01 miles. The total length of main and pipe sewers on June 30, 1923, was 775.98 miles, of which 153.82 miles are main sewers and 622 16 miles are pipe sewers. In addition to the above new sewer work, 108 storm-water catch basins were constructed during the year, bringing the total number to 5,883.

There was expended during the year on new extensions of the sewerage system the sum of $389,721.18, with no expenditure on the sewage-disposal system; however, $40,000 was obligated for expenditures in the fiscal year 1924. The total cost of the sewerage system to June 30, 1923, was $15,802,236.46. The total cost of the sewage-disposal system to the same date was $5,975,232.96, making a total cost of the complete system to June 30, 1923, of $21,777,469.42.

The main sewerage pumping station and the three substations were in continuous operation throughout the year, handling the sewage of practically the entire District. In addition, the main

[1] Includes receipts from rentals at the municipal fish market.

station pumped storm water from the 900-acre low level area flanking Pennsylvania Avenue between the Peace Monument and Fifteenth Street. At the main station the combined pumpage of sewage and storm water amounted to 25,968,718,950 gallons during the year. The Poplar Point substation pumped 721,841,896 gallons, the Rock Creek substation 270,311,836 gallons, and Woodridge substation 18,284,246 gallons of sewage during the year. Eliminating the Rock Creek and Woodridge substations, which deliver their discharge to the main station, the above would indicate a mean daily pumpage of 73,124,816 gallons. The coal consumption at the main sewerage pumping station for the year amounted to 3,986 tons.

Pursuant to act of Congress approved September 1, 1916, to protect streams flowing through United States parks and reservations in the District of Columbia from pollution and the act of the Maryland State Legislature approved April 10, 1918, negotiations are continuing with the Washington Suburban Sanitary Commission governing the conditions under which Maryland sewage may be diverted through the District sewers to the District pumping stations. In advance of carrying out any terms as finally agreed upon, it will be necessary to extend the three principal interceptors to the District line at an estimated cost of $955,000.

Constant increase in the size of the sewerage system with no corresponding increase in the funds available for cleaning is causing a gradual falling behind in this work and increasing the danger of property damage during heavy rainstorms through the overcharging of uncleaned sewers; also insufficient cleaning of catch basins is resulting in rotting of sludge with a consequent health menace.

Lack of appropriations in the past has held up construction of necessary suburban trunk sewers required to provide outlets for service sewers and to properly take care of the drainage from newly paved streets until funds of approximately $3,000,000 are now required for necessary construction.

Relief sewers in the older sections of the city are urgently needed to carry off drainage not properly disposed of at present because of the inadequate size of some of the older sewers.

Attention is again called to the inability of the division to keep abreast of the building activities with proper sewer facilities. The fiscal year ended with service sewers ordered constructed for the service of new and existing buildings, estimated to cost $161,337, with all funds for the year expended or obligated.

WATER MAINS.

During the year 83,849 feet, or 15.9 miles, of water mains were laid, an increase of 4.1 miles over length laid last year, making the total length of mains now in service 674 miles, at an aggregate cost of $4,801,863.63 paid from water department funds.

WATER CONSUMPTION.

The mean daily consumption for the fiscal year was 63,982,461 gallons, giving a mean daily per capita consumption of 142 gallons, estimated on a population of 450,000.

The total pumpage for the year was 12,180,790,430 gallons.

The total coal burned was 7,632 tons.

The cost of operating pumps for the year was $115,748.16, as against $102,637.92 for fiscal year 1922; thus making the cost of pumping 1,000,000 gallons of water into the mains $9.58, as against $8.74 for the preceding year, due to the increased cost of fuel.

Underground leakage found and stopped during the year aggregated a saving of 755,000 gallons daily.

The financial statement of the water revenues and expenditures will be found in the report of the auditor.

WATER METERS.

Two thousand seven hundred and seventy-nine new meters were installed during the year. Sixty-seven thousand five hundred and sixty-seven, or 86.9 per cent of the total water services are now metered.

Very respectfully,

CUNO H. RUDOLPH,
JAMES F. OYSTER,
J. F. BELL,
Commissioners of the District of Columbia.

REPORT OF THE OPERATIONS OF THE ENGINEER DEPARTMENT OF THE DISTRICT OF COLUMBIA.

REPORT OF ASSISTANT ENGINEER COMMISSIONER WHEELER.

WASHINGTON, D. C., *September 15, 1923.*

SIR: I have the honor to transmit herewith the annual reports showing the operations of the various divisions and offices under my immediate supervision for the fiscal year ended June 30, 1923.

Very respectfully,

R. A. WHEELER,
Major, Corps of Engineers, United States Army,
Assistant to the Engineer Commissioner.

The ENGINEER COMMISSIONER.

REPORT OF ENGINEER OF HIGHWAYS.

WASHINGTON, D. C., *August 20, 1923.*

SIR: I have the honor to submit the following report of the operations of the engineer of highways for the fiscal year ended June 30, 1923. The total amount of funds appropriated by Congress and deposited by corporations and others for disbursement by the highway division aggregated $1,685,199.32, of which $250,000 was for paving sidewalks and alleys in all parts of the District; $233,500 for paving new roadways; $460,000 for repairing old roadway pavements, including asphalt resurfacing; $250,000 for repair of suburban roads; $27,500 for construction and repair of bridges and viaducts; $35,000 for grading streets and avenues; $15,000 for sidewalks and curbs around Government reservations, buildings, and parks; $50,000 for paving roadways under the permit system; while $364,199.32 was spent in repairing pavements disturbed by other branches of the District government and by various corporations and others.

Summary of work under appropriation for improvement and repairs for year ending June 30, 1923.

Standard sheet asphalt pavements	square yards	21,079.27
Sheet asphalt surface pavements	do	718.91
Asphalt surface pavements (blanket treatment)	do	44,996.00
Vitrified block gutter	do	1,553.77
Cement concrete roadway pavements	do	42,506.42
Old cobble and granite block removed	do	2,187.00
Granite and bluestone set	linear feet	10,486.80
Cement curb formed and laid	do	26,595.16
Grading	cubic yards	104,671.68
Cement concrete sidewalks (assessment and permit work)	square yards	46,614.32
Cement concrete sidewalks around Government reservations)	square yards	4,379.45
Cement concrete alleys (assessment and permit work)	do	38,873.00

The following is the list of tables appended to the report:

Table A.—Street railways in the District of Columbia, July 1, 1923.
Tables B and C.—Statement of character and extent of street pavements.
Table E.—Street improvements.
Table F.—Repairs to asphalt and coal-tar pavements.
Table G.—Work done for street railway companies.
Table H.—Work done by day labor under appropriation for "Repairs to streets, avenues, and alleys."
Table I.—Regular permit work.
Table K.—Assessment work.
Table L.—Replacing and repairing sidewalks and curbs around public reservations.
Table M.—Miscellaneous work.
Table N.—Whole cost work.
Table O.—Repairs to cuts by plumbers and others.
Table P.—Grading streets, alleys, and roads.

Of the above tables, B, C, and O are printed herewith. The remaining tables are on file in the record room of the office of the engineer of highways, plan case No. B–1139.

Unit costs of contract work showed no recession except as to concrete roadways. Funds for paving roadways were quite inadequately provided, and this fact, with the continued development of new streets by builders, created a situation little short of deplorable. There are squares of streets numbered by the dozens with no better roadways than cinders whose frontages are from 75 to 100 per cent improved by dwellings whose erection is responsive to the housing shortage.

A fund of $50,000 provided this year for the paving of roadways on deposit by the property owners of one-half the cost was entirely consumed. No funds were provided for the permanent roadway paving of our main thoroughfares, with the result that notwithstanding extravagant expenditures for upkeep traffic conditions thereon were inadequate to the plain necessities. No individual paving item was notable. At the end of the year all work appropriated for had been completed except two small items which were approaching completion under contract.

A special asphalt surface mixture designed by Major Besson was laid somewhat experimentally on certain granite-block roadways and certain fairly heavily traveled suburban macadam roadways as a part of the year's work. While it is realized that the economic justification of this process must depend on the useful life of the surface, its behavior to date has given pronounced encouragement to our hopes that it may find very general and advantageous use.

MUNICIPAL ASPHALT PLANT.

The total output of the municipal asphalt plant for the year was 211,500 cubic feet of material, consisting of 188,016 cubic feet of old material mixture and 23,484 cubic feet of topping mixture. The plant was operated for 247 days, with an average daily output of 856 cubic feet. In connection with the output of the plant the crusher was operated for 65 days during the year, and 4,210 cubic yards of old material hauled to the plant from various streets was crushed.

Constant attention is given to the maintenance of both the plant and the crusher, repairs being made and parts replaced when necessary, thereby keeping them in the best operating condition possible. This cost is incorporated in the total cost of output shown below.

The following material in amounts set forth below was purchased for use in manufacturing the output during the year:

Limestone dust, 175 tons, cost average	$4.26
Sand, 3,838.50 cubic yards, cost average	1.57
Asphaltic cement, 737.45 tons, cost average	16.10

There were purchased for use in operating the crusher and mixer the following large items:

Fuel oil, 32,411 gallons, cost average	$0.06
Coal, 193.36 tons, cost average	8.36
Wood, 80 cords, cost average	16.41

The cost of operation, including labor and material, are kept from day to day, and the summary of this data for the fiscal year develops the following unit costs for the year's operation:

Operation of crusher.

[Period of operation, 65 working days; output of crusher, 4,210 cubic yards.]

Cost of crushed product per cubic yard:	
Labor and fuel	$1.30
Maintenance, renewals, and repairs	.11
Overhead cost: The original cost was amortized by deducting 20 per cent from same each year during the first five years of its life.	
Total cost	1.41

Operation of plant.

[Period of operation, 247 days; total output, 211,500 cubic feet.]

	Cents.
Total manufacturing cost per cubic foot:	
Labor	7.92
Fuel oil	1.14
Coal	.66
Wood	.62
Total cost	10.34
Haul from plant to street:	
Labor	8.44
On street:	
Labor	26.49
Painting joints	.27
Fuel	.30
Total cost	27.06
Maintenance and repairs:	
At plant	.76
On street	.14
Total	.90
Overhead: The original cost was amortized by deducting 20 per cent from same each year during the first five years of its life.	
Supervision:	
Foremen and overseers	4.32
Total manufacturing cost per cubic foot:	
Plant labor	10.34
Hot haul	8.44
Street work	27.06
Maintenance of plant and tools	.90
Supervision	4.32
Total	51.06

The sand used was bought under contract at 80 cents per cubic yard and hauled from the wharf to the plant at the cost of $2,965 for 3,838.50 cubic yards, or $0.77 per cubic yard, a total of $1.57 per cubic yard. All other expendable material was delivered at the plant site at the cost thereof used herein.

The cost of a cubic foot of old material from the above was as follows:

0.65 cubic foot of old material, at $1.41 per cubic yard	$0.0339
0.35 cubic foot sand, at $0.80 per cubic yard; hauled, $0.77 per cubic yard	.0203
3.33 pounds limestone dust, at $4.26 per ton	.0071
5.04 pounds asphaltic cement, at $16.10 per ton	.0405
Cost of material	.1018
Manufacturing and placing cost	.5106
Total cost per cubic foot	.6124

Topping mixture:

1 cubic foot of sand, at $0.80 per cubic yard; hauled, $0.77 per cubic yard	.0581
4.20 pounds limestone dust, at $4.26 per ton	.0089
10.08 pounds asphaltic cement, at $16.10 per ton	.0811
Cost of mater'al	.1481
Manufacturing and placing cost	.5106
Total cost per cubic foot	.6587

The total cost of minor repairs to sheet asphalt and asphaltic concrete pavements during the year, the same representing the maintenance cost during the year, was $78,922.54. This cost represented the maintenance of all asphalt and asphaltic concrete streets not under guaranty by contractors, a total yardage of 3,552,193. The cost per square yard per year was therefore about 2.22 cents.

For purposes of record and comparison the like annual reports are here stated for past years: 1908, 3.8 cents; 1909, 2.3 cents; 1910, 2.6 cents; 1911, 2.2 cents; 1912, 2.4 cents; 1913, 2 cents; 1914, 1.9 cents; 1915, 1.9 cents; 1916, 1.8 cents; 1917, 1.5 cents; 1918, 1.7 cents; 1919, 3.07 cents; 1920, 3.38 cents; 1921, 3.75 cents; 1922, 2.69 cents.

The municipal asphalt plant began operations in 1912, repairs being made by contract during the first quarter of that year, and with the asphalt plant during the last three quarters of that year and continuously since. The marked reduction for the year 1917 is affected very significantly by the law effective that year by which repairs to pavements over one year old are chargeable to repair appropriations instead of being paid for by the paving contractors under a five-year guaranty, as formerly. The yardage of pavement over which our repairs were distributed was thus increased by nearly 700,000 square yards, on which practically no expenditures were needed, as the pavements were only from one to five years old.

In connection with these costs of annual repair it should be considered that some of the streets approximate an age of 40 years and that the average age of those we have resurfaced in recent past years exceeds 25 years. The average age of streets resurfaced in 1910 was 25.8 years; in 1911, was 24.5 years; in 1912, was 25.8 years; in 1913, was 26 years; in 1914, was 28.5 years; in 1915, was 28 years; in 1916, was 29.6 years; in 1917, was 27 years; in 1918, was 26 years; in

1919, was 26.7 years; in 1920, was 23.6 years; in 1921, was 23.2 years; in 1922, was 28.7 years; there was no resurfacing done in 1923.

During the year there was purchased from the Cranford Co., under contract No. 7530, the following material in bulk at contractor's plant, to be used in connection with minor repairs to asphalt pavements and repairs to cuts:

3,048 cubic feet of topping, at 47 cents per cubic foot	$1,432.56
3,055.20 cubic feet binder, at 39 cents per cubic foot	1,191.53
Total	2,624.09

This material was hauled from plant and laid in the streets by the District of Columbia repair forces.

This procedure was in continuation of that of the preceding year, though more limited as to amount involved. The municipal plant alone could hardly have met the aggregate needs of our work and was not subjected to the injurious strain of attempting it.

STREETS.

Repairs to streets, avenues, and alleys, appropriation 1923, were made under the immediate supervision of the superintendent of streets, as follows:

Brick sidewalk relaid	square yards	10,451
Asphalt block paved	do	864
Asphalt block repaved	do	12,226
Vitrified block paved	do	1,417
Vitrified block repaved	do	3,980
Curb reset	linear feet	865
Flag relaid	square yards	70
Granite block laid	do	5,784
Cement walk relaid	do	6,392
Grading	cubic yards	4,670
Labor		$99,732.26
Material		$10,462.71

SUMMARY.

Northwest section, east of Sixteenth Street	$36,060.29
Northwest section, west of Sixteenth Street	11,974.93
Northeast section	21,498.35
Southeast section	17,476.85
Southwest section	15,596.50
Georgetown	7,588.05
Total	110,194.97

SUBURBAN ROADS.

The following amounts were expended principally under the supervision of the superintendent of roads, viz:

Repairs to suburban roads (District of Columbia appropriation act, 1923)	$225,000
Repairs to suburban roads (deficiency act)	25,000
Allotment from appropriation for repairs to streets, avenues, and alleys, 1923	50,000
Grading streets, alleys, and roads	35,000
Paving roadways under the permit system	50,000
Paving under special appropriations	98,500
Grading Brandywine Street and Twenty-ninth Street	14,000

The work of repairs to suburban roads consisted almost entirely of maintenance of the suburban road and street system and of roadways on unimproved streets where buildings had recently been erected.

There were purchased, hauled, and spread on such unimproved streets about 25,000 cubic yards of soft-coal cinders, in addition to about 8,000 cubic yards of ashes received from the ash collections.

Repairs to the macadam roads were made principally by patching with bituminous materials and stone.

Bituminous surface treatment was given to about 652,000 square yards of macadam roads at an average cost of about 6 cents per square yard. In this treatment there were used 83,179 gallons of road oil, 72,860 gallons of tar, and 8,000 tons of gravel and stone chips.

Resurfacing with a special mixture of asphalt and sand, mixed and laid hot directly upon the bituminous surface of the macadam as a base, was done on Naylor Road from Alabama Avenue to the District line and on Pennsylvania Avenue from Anacostia River to Alabama Avenue. This was done at an approximate cost of $1.20 per square yard and gives a reasonably priced surface which will probably require little maintenance.

Tabulated statements in detail of the work are on file in the office of the engineer of highways.

Previous recommendations for paving the principal trunk highways to the District line as rapidly as funds can be provided and for legislation limiting the weights of loaded vehicles are renewed.

BRIDGES.

The expenditures from the appropriation for the construction and repair of bridges amounted to $24,890.97, and their is an obligation of about $2,300 on contract 7737 for reconstruction of Kenilworth Avenue culvert. The unexpended balance was $134.56.

The principal items of work were:

Chain Bridge, paint	$2,160.01
M Street, over Rock Creek, repair, trusses	1,142.67
Pennsylvania Avenue Bridge, over Eastern Branch, refloor sidewalk (incomplete)	3,152.19
Livingston Road, over Oxon Run, SE., rebuild (incomplete)	3,166.91
Dangerous holes and minor repairs	3,659.01
Salaries	5,997.86
Lumber (estimated)	4,476.31
Construction materials, other than lumber	3,148.27

The appropriations for Anacostia and Highway Bridges were expended practically in full.

EXPENDITURES FOR BRIDGE REPAIRS, PAINTING, CONCRETE WORK, ETC.

Repairs to N Street oil trestle, by day labor	$317.68
Emplacement of concrete filler and installation of steel ties between track girders on the N Street stone trestle, by day labor	406.60
Painting of various lamp-posts with route marks, by day labor	996.74
Construction of 2 clearance gauges at the Highway Bridge, completed by day labor	878.51
Removal of existing old piles and portion of old pier at Wharf No. 6, completed by day labor	271.44
Construction of drainage ditch adjacent to the Anacostia River Bridge, completed by day labor	150.12
Raising footways of Calvert Street Bridge to conform to new roadway floor, by day labor	211.62
Replacement of fence at Wharf No. 6, completed by day labor	14.88

Construction of timber runway at Wharf No. 6, completed by day labor $166.17
Contract with the Allen H. Rogers Co., for construction of nine reinforced-concrete stalls at the District stone trestle, completed 11,579.57
Contract with Royal J. Mansfield for construction of 12 reinforced-concrete bins at the District stone trestle, completed 15,062.60
Contract with Royal J. Mansfield for repairs to Calvert Street Bridge over Rock Creek, completed 20,221.09
Contract with the Cambridge Manufacturing Co. for construction of reinforced-concrete wharf deck at Wharf No. 6, completed 14,665.69
Contract with Becker & Chapman Co., removal of old piles and furnishing and driving new fender and cluster piles at Wharf No. 6, completed 2,361.31

A contract was entered into with the Pamfilis Construction Co. for painting three spans of the Anacostia River Bridge. The work is in progress.

The William F. Cush Co. contracted for reconstruction of culvert in line of Kenilworth Avenue NE., north of Benning viaduct. This work also is in progress.

Details of the above expenditures are filed in the office of the Engineer of Highways as B–1139.

STABLES.

The engineer stables, housing 55 horses and 21 mules, are located at U Street NW., between Sixteenth and Seventeenth Streets, and First and Canal Streets SW. The animals are assigned to the various departments as follows:

Sewer division	20
Repair shop	21
Repairs to cuts	22
Sealer of weights and measures	1
Electrical department	2
Total	76

Number of annual employees: 1 superintendent, 1 blacksmith, 2 drivers, 2 watchmen.

My acknowledgments are due to the employees of this division for the work accomplished by the office during the year.

Very respectfully,

C. B. HUNT,
Engineer of Highways.

ASSISTANT TO THE ENGINEER COMMISSIONER.

TABLE B AND C.—*Character and extent of roadway pavements, July 1, 1923.*

SQUARE YARDS.

Section.	Asphalt.	Asphaltic surface.	Asphalt block.	Asphaltic concrete, concrete base.	Asphaltic concrete, stone base.	Cement concrete.	Durax block (small granite block).	Granite and rubble.
Northwest	1,819,241	2,322	25,323	9,674	6,372	20,999	12,294	94,305
Northeast	415,575	.....	193,962	3,127	.....	11,895	.....	17,601
Southeast	262,954	.....	238,437	8,019	4,082	2,509	.....	37,199
Southwest	286,102	13,264	40,436	13,535	.....	11,148	.....	136,374
Georgetown	156,171	.....	23,076	4,144	905	.....	5,674	30,492
Northwest suburban	391,975	6,311	84,046	25,855	31,798	208,661	.....	17,634
Northeast suburban	90,255	.....	6,925	14,354	.....	36,136	.....	.....
Southeast suburban	21,203	23,099	.....	.....	3,049	12,933	.....	1,000
Total	3,443,476	44,996	612,205	78,708	46,206	304,211	17,968	334,605

TABLE B AND C.—*Character and extent of roadway pavements, July 1, 1923*—Con.

SQUARE YARDS—Continued.

Section.	Vitrified block.	Cobble.	Macadam (estimated).	Gutters on asphalt streets.	Gutters on asphaltic concrete streets.	Pavements maintained by street railroads.	Total.
Northwest	9,855	5,763	20,939	119,662	1,128	287,110	2,434,987
Northeast	3,882	.....	30,416	32,955	231	69,316	778,800
Southeast	.....	13,122	45,465	18,316	838	48,328	679,329
Southwest	3,138	7,070	10,136	24,527	1,254	56,800	603,804
Georgetown	515	10,419	3,000	5,979	498	35,355	276,198
Northwest suburban	.....	.....	1,298,109	28,710	5,260	51,765	2,153,124
Northeast suburban	.....	.....	377,598	6,383	1,049	9,000	541,700
Southeast suburban	.....	.....	50,563	6,385	272	7,370	125,874
Total	17,390	36,374	1,836,226	242,917	10,590	568,034	7,593,906

MILEAGE.

Section.	Asphalt.	Asphaltic surface.	Asphalt block.	Asphaltic concrete, concrete base.	Asphaltic concrete, stone base.	Cement concrete.	Durax block (small granite block).
Northwest	93.52	0.20	1.57	0.51	0.24	1.15	0.30
Northeast	21.77	.....	8.58	.19	.....	.80	.....
Southeast	13.93	.....	11.93	.43	.17	.16	.....
Southwest	15.51	.66	2.37	.68	.....	.36	.....
Georgetown	9.30	.....	1.51	.49	.06	.....	.27
Northwest suburban	21.86	.29	4.52	1.31	1.79	11.37	.....
Northeast suburban	5.64	.....	.63	.97	.....	2.00	.....
Southeast suburban	1.83	1.97	.....	.....	.21	.51	.....
Total	183.36	3.12	31.11	4.58	2.47	16.35	.57

Section.	Granite and rubble.	Vitrified block.	Cobble.	Macadam (estimated).	Gravel and unimproved (estimated)	Total.
Northwest	5.25	0.50	0.08	0.90	2.54	106.76
Northeast	.87	.24	.....	1.60	4.02	38.07
Southeast	2.14	.....	.66	2.15	6.33	37.90
Southwest	7.09	.27	.30	.49	2.62	30.35
Georgetown	2.12	.03	.48	.06	.76	15.08
Northwest suburban	.84	.....	.....	81.72	56.96	180.66
Northeast suburban	.....	.....	.....	27.12	46.68	83.04
Southeast suburban	.04	.....	.....	3.72	36.60	44.88
Total	18.35	1.04	1.52	117.76	156.51	536.74

TABLE O.—*Number of square yards and cost of repairs to cuts in various streets, sidewalks, and alleys during the fiscal year ending June 30, 1923, chargeable to plumbers, public-service corporations, individual depositors, and appropriations of the District and Federal Governments.*

	Flat rate.	Whole cost	Total.
Plumbers	$21,840.79	$154,340.45	$21,840.79
Public service corporations	61,697.02	145,340.45	216,037.47
Individual depositors	21,808.68	.....	21,808.68
Various appropriations of the District and Federal Governments	57,951.30	46,561.08	104,512.38
Total	163,297.79	200,901.53	364,199.32

TABLE O.—*Number of square yards and cost of repairs to cuts in various streets, sidewalks, and alleys, etc.*—Continued.

	Flat rate.	Whole cost.
Square yards repaired:		
Sheet asphalt	$5,231.01	$6,761.09
Vitrified block	1,438.03	5,034.78
Asphalt block	1,881.80	5,792.73
Granite block	1,037.62	2,522.53
Cobble	205.12	168.19
Cement sidewalks	17,835.62	
Brick sidewalks	5,166.00	8,528.55
Macadam	3,131.68	2,363.36
Durax block	26.72	6,692.55
Scoria block	24.20	6,240.99
Concrete roadways	5,257.51	
Total	41,235.31	44,134.77

REPORT OF THE INSPECTOR OF ASPHALTS AND CEMENTS.

WASHINGTON, D. C., *September 1, 1923.*

SIR: I have the honor to submit the following report of operations of this division during the fiscal year ending June 30, 1923. Total number of samples tested, 10,065; record of each on file in office.

In addition to the above there were 2,951 experimental tests made of asphalts, sands, gravel, concrete, etc., in connection with special experiments carried on under the personal supervision of former assistant to the engineer commissioner then in charge of these laboratories; record thereof also on file in this office.

ASPHALT PAVEMENTS.

There were laid by the Cranford Paving Co. and the Corson & Gruman Co. approximately 21,079 square yards standard asphalt roadways, using Aztec, Standard, and Bermudez asphalt.

In addition to the above there was also laid by the same contractors approximately 69,734 cubic feet, equaling 44,966 square yards, of asphalt concrete; this in resurfacing old macadam roadways.

In this material concrete sand is used in lieu of asphalt sand, as used in standard asphalt, the material consisting of approximately 65 per cent concrete sand, 25 per cent limestone dust, and 10 per cent asphalt cement.

This is the second year mixture of this kind has been used by the District; a small quantity was first laid in year 1922. All laid has thus far proven satisfactory.

PORTLAND CEMENTS.

Number of samples tested, 8,946, representing 89,468 barrels, all of which complied with specifications.

Nine tables showing in detail materials tested, results thereof, and by whom submitted are on file in this office.

Very respectfully,

J. O. HARGROVE,
Inspector of Asphalts and Cements.

ASSISTANT TO ENGINEER COMMISSIONER.

REPORT OF THE SUPERINTENDENT OF TREES AND PARKINGS.

WASHINGTON, D. C., *August 24, 1923.*

SIR: I have the honor to submit my annual report dealing with the operations of the trees and parkings division for the fiscal year ended June 30, 1923.

TREES PLANTED.

Fifty-eight trees were planted in their permanent position on the streets during the fiscal year. Thirty of these were planted on the west side of Nineteenth Street NW., between Virginia Avenue and New York Avenue, and on the east side of Nineteenth Street NW., between C and E Streets, to replace trees that were removed because they interfered with street improvements; and the remainder were planted for the purpose of filling vacancies in the existing lines. The planting of trees during the year had to be abandoned due to the fact that we were compelled to abandon the tract of ground used as a nursery on reservation No. 13 because of construction work on the Gallinger Hospital, and also the loss of a tract of ground owned by the District of Columbia located at the intersection of Iowa Avenue and Webster Street NW. The loss of the last-named site was a serious blow. Many fine trees of the proper size for transplanting to their permanent position on the streets and many others which could have been planted on the streets in the next two or three years were totally destroyed. The cost of planting 25 trees was paid for from the appropriation for the parking commission, 31 from the appropriations for other departments, and 2 from whole-cost deposits. These trees were planted at the curb line.

TREES REMOVED.

The unfavorable city conditions make the life of a street tree a hard one, and hundreds of trees die annually because of injuries over which this department has no control. The generally poor condition of the soil along the streets is the chief source of injury to shade trees. The soil is continually being impoverished by the growing trees, and we are unable to fertilize them because of cement walks and pavements. A total of 1,621 trees was removed during the year for various reasons.

Of the 1,621 trees removed during the year, 481 were decayed and dangerous; 5 were of inferior and condemned varieties; 14, to relieve excessive shade; 1, interference with parking improvement; 131, street improvements; 40, for driveways; 14, improvements to alleys; 32, destroyed by automobiles; 136, storms; 2, interference with entrance to buildings; 8, close proximity to buildings; 5, interference with building operations; 11, injurious to curb trees; and 1, interference with the construction of water main. It was ascertained that 52 trees were destroyed by illuminating gas; 46, salt water; 53, abnormal moisture supply; 37, by being filled around; 33, by being girdled; 33, by drought; 1, by insects; 38, by root mutilation; 14, by oil; 1, by sewer gas; 28, by horse bite; and the deaths of 404 were unexplained.

Of the number removed, 1,354 stood at the curb line, 158 in the parkings, 60 in the sidewalk, 13 in alleys, 34 in roadways, 1 in playgrounds, and 1 on private property.

The cost of removing 1,424 trees was paid from the appropriation for the parking commission, 105 from the appropriations for other departments, and 92 from whole-cost deposits. The cost of removing the trees paid from the appropriation for the parking commission amounted to a total of $5,106.83.

TREES SPRAYED.

The trees of this city suffer each year from the attacks of insects, principally the elm-leaf beetle, the tussock moth, and the fall webworm. The insects mentioned make their appearance annually, but no serious damage is done, due to the efficient spraying. Solutions of arsenate of lead are used, and this has proved to be the most effective method of dealing with the leaf-destroying insects, since it poisons their food supply. This office has sprayed 41,755 trees during the year for the extermination of leaf-eating insects. This work was performed at a total cost of $2,361.23.

NURSERIES.

A short time after the beginning of the fiscal year this department found itself without adequate nursery facilities to properly take care of replacements and extensions that would be needed to plant trees to keep pace with the rapid growth of the city. The nursery which this department maintained for a good many years on reservation No. 13 has been almost wholly destroyed by the erection of the Gallinger Hospital on that site. The erection of a school building at Fourteenth and Upshur Streets NW. caused this office to abandon that site. Many trees, both in the nursery rows and seed beds, were totally destroyed.

In September, 1922, the Chief of Engineers, United States Army, granted permission to the Commissioners of the District of Columbia to use as a tree nursery the tract containing 34.5 acres of the reclaimed area along the Anacostia River, situated immediately upstream from Bolling Field. On September 25, 1922, this office started to work preparing seed beds, plowing, and fencing, etc., on this site. One thousand two hundred elms, 173 pin oaks, and 700 red oaks were set out in the nursery rows at this location. These trees were about 3 to 4 feet in height, and it will be four or five years before they can be transplanted to their permanent position on the streets. The sum of $6,489.97 was expended during the year in the development of a nursery on the new site.

This department transplanted 287 elm trees, 17 Norway maple, 62 red maple, and 105 sugar-maple trees from the seed beds to the nursery rows at Fort Dupont nursery.

The sum of $3,032.87 was expended during the year to plant, cultivate, and trim the young trees in the nursery rows and seed beds at Fort Dupont nursery site.

TRIMMING.

A great deal of trimming is required on street trees to prevent their encroachment on buildings and their interference with street and sidewalk traffic. This operation in all cases is not considered

best for their welfare, but it is necessary for the reasons stated. During the year the systematic trimming of trees was undertaken, and commencing at Eighteenth Street as the eastern limit, with B Street and Florida Avenue as the south and north boundaries, the work was continued westward to and including all streets in Georgetown. In the area covered by this treatment all trees were cleared of dead, low, and otherwise objectionable branches, with the result that they were much improved in appearance. Owing to the lack of funds and our inability to obtain labor on this class of work, it was not practicable, without neglecting other urgent work, to cover more territory than this, but it is a matter of growing importance that all of the larger trees should receive this attention annually. The silver maples are responsible for the largest outlay in trimming, this species having been planted years ago to the exclusion of many kinds whose subsequent use has proved more advantageous. This tree as a street variety is noted for the early decay of its branches and requires close attention to keep in proper condition. In addition to the above, a small force of men accomplished much trimming on individual requests. The large increase in the scattered work noticeable during the year has taxed to the utmost the efforts of the small force engaged upon it.

A total of 12,667 trees was trimmed during the year at a total cost of $7,756.68.

CULTIVATING YOUNG TREES, MOWING PARKINGS, AND REMOVING TREE BOXES.

The cultivation of young trees is absolutely necessary to insure good growth in young specimens, allowing them to derive the fullest benefit from rainfall. The value of cultivating young trees is not fully appreciated. It is not only beneficial to the young trees, but also destroys a rank growth of weeds that would otherwise spring up around them, and thus give the tree space an unsightly appearance. The keeping of the ground loose allows air to reach the roots, renders more available the plant food the soil contains, and prevents the rapid evaporation of moisture. A total of 401 young trees was cultivated during the year at a total cost of $66.97.

The necessity being recognized to rid the city of as many weeds as possible, it became necessary for this department to mow many uninclosed public parkings throughout the city. This work was performed at a total cost of $4,793.11.

This office mowed the grass on the lawn in front of the District Building and the park in front of the Center Market at Seventh Street and Pennsylvania Avenue NW. at various times in addition to the removal of the weeds along the streets.

Two hundred and eighty-seven old wooden tree boxes and 44 iron tree guards were removed from around large trees that no longer required this protection.

PAVING OF ABANDONED TREE SPACES.

The work of paving abandoned tree spaces throughout the city was performed by the surface division, engineer department, and the cost of the same was paid from the appropriation for the parking commission. A total of $134.87 was spent on this work.

REGULATION OF TERRACES.

This office examined and issued 1,355 permits affecting the grade of terraces in connection with building operations during the year. This office was relieved of the duty of passing on terraces in the first and second commercial and industrial districts near the end of the fiscal year. The regulation of the parking in the residential district is still under the jurisdiction of this department.

GENERAL COMMENT.

The most urgent need of the division of trees and parkings is a permanent nursery, instead of temporary permission to occupy some site on which we must spend thousands of dollars, only to be ousted just as we are in a position to supply the arboreal needs of the city. The erection of the Gallinger Hospital on reservation No. 13 deprived the department of its nursery, in which more than 80 per cent of the trees of Washington were raised. Following this, the loss of the nursery at Georgia Avenue and Upshur Street, which we were required to vacate and reoccupy on two different occasions, cost us thousands of dollars in stock, such as seedlings and seed beds. We are now located at Fort Dupont, a most desirable site, on which trees have been raised in half the time required on the aforementioned sites; but there is not enough ground, and this site, too, must be vacated in time, as it is occupied by a temporary permit from the Federal Government. We have also started operations on another loaned site, on the Anacostia River upstream from Bolling Field. Here we have spent already hundreds of dollars, although it is to be doubted whether this low land, with the water table so near the surface, will produce the hardwood trees, such as the Norway maple (Acer platanoides) and red oak (Quercus rubra), which are desirable for street planting. The elm (Ulmus Americana) will undoubtedly grow on this ground, which is very fertile, but lacks a hardpan to prevent roots from growing to too great a depth, in which case trees can not be dug with sufficient roots to sustain them on the streets where there is an absence of moisture. Where there is a hardpan, such as is usually found in upland ground, a compact root system is formed, which makes transplanting economical and successful.

Hundreds of dollars have been spent on the new site for road building, fencing, building of a barn, running of a water main, clearing and preparing ground, etc. The money expended in occupying these various sites temporarily would more than purchase a permanent nursery; and it would seem that the most desirable step in point of economy would be the purchase of additional ground at Fort Dupont, where land is cheap and highly suitable for our needs.

The recent transfer of our stables and shops to the United States Botanic Gardens, without provision for our own needs, has been another loss to the department. It is only by the exercise of careful and economical management that we have been able to keep the department in working order and care for the existing trees. I know of no money spent in support of the city that, dollar for dollar, gives

such satisfactory returns in beauty, comfort, and health as does the very small amount spent annually on the trees; and more money could, with wisdom, be invested in this worthy cause.

Summary.

Curb trees on streets at close of fiscal year 1922	105,889
Net decrease of curb trees during fiscal year 1923	1,296
Curb trees on streets at close of fiscal year 1923	104,593

C. LANHAM,
Superintendent of Trees and Parkings,
District of Columbia.

ASSISTANT TO THE ENGINEER COMMISSIONER,
District of Columbia.

REPORT OF THE CITY REFUSE DIVISION.

WASHINGTON, D. C., *July 21, 1923.*

SIR: I have the honor to submit the following report of the operations of the city refuse division, engineer department, for the year ended June 30, 1923.

The outstanding and interesting feature of this work was the amount of money returned into the Treasury from products sold. There was received from—

Garbage grease	$221,086.43
Garbage tankage	3,248.26
Salvaged trash	129.676.35
Manure	2,161.36
	356,172.40

This exceeds anything ever done in past years, and is to be accounted for by the large amount of garbage handled and by the good prices received for grease and baled paper.

The appropriation for the collection and disposal of city refuse was $800,000, so that the return was 44½ per cent of this sum, or the actual expense of collecting and disposing of all city refuse (other than street cleaning material) was slightly less than $444,000.

The collection and disposal of 145,432 cubic yards of ashes was a total loss with no salvage, except in so far as certain streets and alleys were improved by deposited ashes in them, and cost $117,727.67. The amount paid to contractors for the collection and disposal of night soil and of dead animals was $20,860. Salaries not allocated to any particular service were $8,940. So that the expense of the collection and disposal of garbage and trash was $641,449.81, as follows:

Garbage collection cost	$251,522.04	
Garbage reduction cost	179,507.16	
Cost of garbage service		$431,029.20
Trash collection cost	100,175.97	
Trash disposal cost	110,244.64	
Cost of trash service		210,420.61
Total cost of garbage and trash		641,449.81
As indicated, the revenue derived from these two sources was		354,011.04
Making the expense of these two services		287,438.77

Included in this sum is $55,000 expended in betterments to plants and in the purchase of equipment. So that the net cost of garbage service for the year was $187.314.43 and of the trash service $51,087.38.

The above showing, it is felt, warrants the expenditure in placing these revenue-producing plants in good running order and in the provision of proper and adequate equipment to do the work economically.

The appropriation for dust prevention and cleaning of streets and alleys was $375,000. The tables appended hereto show the yardage cleaned by the several different methods and the cost of each.

During the winter there were three light snows which gave the department the opportunity to try out the snow law enacted by Congress at the previous session. When the sidewalks were not cleaned by the occupant of the abutting property, the work was done by the District and 767 returns of such expenditures were forwarded to the corporation counsel for collection as provided for in the statute.

The expenditure by this division from the appropriation of $10,000 under this act was $6,832.08.

Much credit for the showing made this year is due my assistants, and I hereby desire to acknowledge my appreciation of their loyal and successful efforts.

MORRIS HACKER,
Supervisor City Refuse.

ASSISTANT TO THE ENGINEER COMMISSIONER.

Cost of street cleaning, July 1, 1922, to June 30, 1923.

	Area (square yards.)	Cost.	
		Amount.	Unit per M.
Machine cleaning, motor	49,197,000	$13,065.07	$0.266
Machine cleaning, horse	65,451,000	19,534.74	.298
Alley cleaning	53,082,000	39,392.12	.624
Suburban cleaning	39,234,000	18,024.78	.459
Hand patrol	1,466,464,000	204,983.34	.140
Motor flushing	72,628,000	8,795.66	.121
Squeegeeing	59,940,000	11,845.35	.198
Sprinkling		4,989.35	
Dumpmen		2,865.20	
Property accounting		2,145.60	
Waste paper boxes		5,088.77	
Snow and ice		8,838.25	
Annual overhead		1,244.22	
Sunday cleaning		2,263.42	
Total		343,075.87	

Comparative data in connection with street-cleaning work, 1919 to 1923.

SQUARE YARDS CLEANED.

	1919	1920	1921	1922	1923
Hand patrol	748,142,000	1,173,802,000	1,323,163,000	1,357,169,000	1,466,464,000
Machine, horse	218,682,000	98,350,000	119,256,000	66,191,000	65,451,000
Machine, motor				45,140,000	49,197,000
Alley cleaning	57,208,000	55,344,000	69,090,000	57,288,000	63,082,000
Suburban streets	32,876,000	34,550,000	60,382,000	50,221,000	39,234,000
Squeegeeing	89,868,000	111,008,000	127,596,000	94,650,000	59,940,000
Flushing	5,539,000	24,433,000	40,812,000	48,223,000	72,628,000
Motor flushing	12,213,000				

DIRECT TOTAL COST.

	1919	1920	1921	1922	1923
Hand patrol	$195,665.33	$237,490.76	$253,485.93	$208,573.06	$204,983.34
Machine, horse	77,555.50	40,915.64	48,237.93	20,337.33	19,534.74
Machine, motor				9,974.13	13,065.07
Alley cleaning	45,118.53	44,239.33	45,699.39	35,171.92	39,392.12
Suburban streets	20,540.42	24,231.40	33,372.65	19,887.76	18,024.78
Squeegeeing	20,929.32	24,743.81	27,681.70	14,286.34	11,815.35
Flushing	2,757.63	6,835.91	7,424.31	6,498.78	8,795.66
Motor flushing	4,418.61				

COST PER 1,000 SQUARE YARDS.

	1919	1920	1921	1922	1923
Hand patrol	$0.261	$0.202	$0.192	$0.154	$0.140
Machine, horse	.354	.416	.404	.307	.298
Machine, motor				.221	.266
Alley cleaning	.789	.800	.661	.614	.624
Suburban streets	.625	.702	.549	.395	.459
Squeegeeing	.233	.223	.217	.151	.198
Flushing	.497	.279	.182	.135	.121
Motor flushing	.361				

Comparative data in connection with disposal of all city wastes from 1919 to 1923.

NUMBER OF UNITS COLLECTED.

	1919	1920	1921	1922	1923
Garbage, tons	53,258	52,793	60,058	69,452	80,014
Ashes, cubic yards	134,673	148,228	135,940	156,100	145,432
Miscellaneous refuse, do	149,650	170,286	148,908	196,763	190,021
Night soil, barrels	11,111	12,734	12,507	14,190	15,217
Dead animals, number	19,974	19,995	24,704	28,675	30,120

TOTAL NET COST.

	1919	1920	1921	1922	1923
Garbage	$267,662.54	$178,311.57	$283,406.63	$210,268.15	$187,314.43
Ashes	100,300.00	111,218.38	116,421.04	135,267.18	117,727.67
Miscellaneous refuse	51,204.00	46,522.26	66,029.59	107,439.81	51,087.58
Night soil	17,500.00	17,500.00	17,500.00	17,500.00	17,500.00
Dead animals	3,360.00	3,360.00	3,360.00	3,360.00	3,360.00

MISCELLANEOUS DATA ON CONTRACTS.

Class of waste.	Contractor.	Period of contract.	Date of expiration.	Price per annum.	Collected from—
Dead animals	Chas. F. Mann	5 years	June 30,1923	$3,360	Every part of the District.
Night soil	Warner Stutler	do	do	17,500	All privies in the District.

REPORT OF THE SURVEYOR.

WASHINGTON, D. C., *August 30, 1923.*

SIR: The report herewith attached is for the operation of the surveyor's office for the year ended June 30, 1923. This report will include all condemnation cases for streets, alleys, and parks.

It might be said that the work of this office is divided into three classes:

1. Work done for private parties, for which a fee is charged, the amount charged being regulated by a schedule of fees approved by the commissioners.

2. Work done for the various coordinate departments of the District and for the Federal Government. No fee is charged for this class of work.

3. Surveys, descriptions, and preparation and report covering all condemnation cases for streets, alleys, and parks.

The first class of work, or private work, for which a charge is made, has greatly increased over any previous year. This increase has been continuous since the close of the war, and has grown to such proportions that the office force can not perform the work promptly and satisfactorily to the public.

A few illustrations will show the increase of this class of work: Lots or parts of lots surveyed during the past year showed an increase over those surveyed the year previous, from 5,043 to 6,065; surveys to verify walls under construction from 1,700 to 1,893; individual lots inspected where new buildings are being erected, from 3,022 to 3,305; total number of lots created, from 3,878 to 4,632; estimates or orders for work to be done from 11,320 to 12,659; plats prepared for private parties 8,658 to 10,308; the total number of surveys, from 4,135 to 5,122; and the total number of plats drawn, from 12,100 to 14,669.

It will be noted that the number of orders for work received during the past year represents an average of 44 orders per day, which represents an increase far in excess over any previous year.

The total receipts for the year immediately preceding the past fiscal year amounted to $40,503.80, as compared with $48,461.90 for past fiscal year. This is much in excess of the appropriation for the maintenance of this office. While it has never been assumed that the office should even be self-sustaining, for the reason that much work is done for the Government, and a large part of the time of the office force is consumed in furnishing the public with free information, this fact is pointed out as an interesting feature as tending to show just what the office has been accomplishing. It is not fair to ask the office force to bear this increase in work from year to year and not have any corresponding increase in the force. This work should be done promptly, for frequently important building operations and transfers of property involving large sums of money depend upon the prompt execution of the work, and where the private citizen pays for the service he is entitled to and should receive prompt service. This is impossible to do with the present inadequate force.

The following table is submitted for your information, showing a comparison of the work between the fiscal years 1921–22 and 1922–23:

	Fiscal year 1921–22.	Fiscal year 1922–23.
For private parties:		
Individual lots or parts of lots surveyed in city and county	5,043	6,065
Certificates of survey issued covering one or more lots	2,227	2,880
Duplicates of above recorded in survey certificate books	2,227	2,880
Separate surveys made to verify walls	1,700	1,893
Postal-card reports concerning walls issued to owners	1,760	1,893
Individual buildings inspected as to location of walls	3,022	3,395
Large tracts in county surveyed, subdivided, and recorded	21	12
Outline surveys in county of unsubdivided tracts	78	202
Subdivision plats prepared in duplicate	532	587
Duplicate subdivisions prepared for assessor	532	587
Subdivisions recorded	470	496
Total of individual new lots in subdivisions	3,878	4,632
Plats of one or more recorded lots to accompany applications for building permits (commonly called "building plats"), in duplicate	5,618	6,452
Plats made up under regulations for theaters, garages, etc	152	175
Estimates of cost issued in triplicate	11,320	12,659
Plats made up on order of private parties	8,658	10,308
Total of fees paid to collector of taxes by private parties	$10,503.80	$48,461.90
For the District of Columbia:		
Surveys made for the District of Columbia	109	135
Plats recorded (condemnations, dedications, etc.)	69	101
Reports concerning walls to building inspector	1,700	1,893
Assessment and taxation plats recorded	415	709
Miscellaneous:		
Total of surveys for the District of Columbia and private parties	4,175	5,122
Total of plats, public and private, including plats drawn in books	12,100	14,669

HIGHWAY PLAN.

The appropriation of $2,000 for marking permanently on the ground the permanent system of highways has been expended by running out various street lines and marking the street corners by permanent monuments. About 125 granite monuments have been placed at different parts of the District, marking the street plan. Some of the more prominent streets marked are Alabama Avenue, Benning Road, Forty-sixth Street, Division Avenue, Sheriff Road, and South Capitol Street.

This appropriation has been advantageously expended and should be continued. It facilitates future surveys, and is a guide to property owners in determining the location of the street plan.

Changes in the highway plan can be made after plans providing for such changes are drawn up by the Commissioners of the District of Columbia and approved by the highway commission, composed of the Secretary of War, the Secretary of the Interior, and the Chief of Engineers, United States Army, and certain other legal requirements carried out, such as advertisement, hearing by commissioners for parties concerned, etc.

There have been several of these changes made during the past year, and the plats covering same approved and recorded in this office as follows:

1. Seventeenth Street between Blagden Avenue and Colorado Avenue NW.

2. Crittenden Street between Sixteenth Street and Seventeenth Street NW.

3. Alabama Avenue between Thirty-first Street and Pennsylvania Avenue SE., Austin Street east of Thirty-second Street SE. (eliminated), Suitland Road south of Bowen Road SE.

4. Alabama Avenue (Hamilton Road) between Twenty-second Street and Twenty-fourth Street SE.

SUBDIVISIONS.

Much activity is shown in the subdivision of agricultural land into building lots, due to the great building activity now going on in the District, and in this connection it was deemed advisable to revise the subdivision regulations. Accordingly this office submitted a revision, which was approved by the commissioners and has been published in pamphlet form.

The number of subdivisions prepared by this office during the past fiscal year was 587. This was an increase of 55 over the previous year. The number of subdivisions recorded was 496, which was an increase of 26 over the previous year. For every subdivision prepared there is a duplicate copy made for the records of the assessor's office.

CONDEMNATION CASES.

During the past year there have been before the courts 42 street and park condemnation cases and 17 alley cases. During the year 23 new condemnation street and park cases have been filed and 12 new alley cases; 13 street and park cases have been confirmed and 9 alley cases. The magnitude of this will be shown by the amount of damages allowed for the property taken. The total damages allowed for property taken for streets, parks, etc., was $130,780.39, and $14,-979.64 for alleys.

The more important cases considered during the past year were: Establishment of building restriction lines on Kalorama Road, Wyoming Avenue, Thirteenth and Fourteenth Streets, and the opening of Legation Street, Eastern Avenue, Fifteenth Street, Hamlin Street, Southern Avenue, Jenifer and Forty-second Streets, Fourteenth Street, streets in Barry Farm (east of Nichols Avenue), Ninth Street, Underwood Street, Tuckerman Street, and many others.

There is some criticism to the opening of streets by condemnation in which the entire cost is assessed as benefits, but it is believed that this law is a very great benefit in developing the District in an orderly, comprehensive way. Careful consideration is always given to the importance and necessity of the case, and at the same time realizing that it is in the interest of economy to secure the land before it is improved by some obstructions or increases in value. This increase would only add to the burden of the property owner, who ultimately has to pay the cost. The property owner always has his protection in court, so it is believed no injustice can be placed upon him.

Other condemnation cases will be considered during the coming year and forwarded to the commissioners as the necessity arises, when the exigencies of the case justify such action. Some of the more important cases being considered at this time are the widening of Broad Branch Road from Rock Creek to the District line, the widening of Benning Road east of Benning, the widening of Sheriff Road and Canal Road west of Georgetown. These are important

lines of travel that should be widened before the physical improvement makes the cost prohibitive.

It is not possible to open many of the important proposed streets under the present law where substantial improvements are in the line of the projected street. This would make the assessment for benefits so great that the property owners could not equitably stand the assessment for benefits. In all such cases there should be an appropriation to bear part of the cost. Many localities have been retarded in development by reason of streets being thus blocked, and the sooner there is some provision made for opening the streets through these spots the better it will be for the development of the street plan and the orderly growth of the city.

A table showing the street, park, and alley condemnation cases on the court docket during the past year and those filed and confirmed during the year is on file in this office.

PARKS.

The L'Enfant plan of the Federal city of 1791 provided for a magnificent street and park plan. This plan stopped at what was Boundary Street (now Florida Avenue), beyond which there is no park plan, and if provision is not made for the acquisition of land for parks over this area there will be a great lack of parks, and it will be in no proportion to the park area of the original Federal city.

No land may be subdivided without conforming to a street plan, but there is no such provision for parks. There are many beauty spots where magnificent trees exist which should be acquired before the rapid development of the city destroys them.

The new Washington being created beyond Florida Avenue will not have the liberal park area the old Washington has, and it is certainly a reflection upon the present generation not to provide for more recreation space for the future population of this rapidly growing city.

While it is believed that a comprehensive park plan would be desirable, this office has, however, from time to time recommended specific tracts for parks where there is danger of their being lost to the park system. These are Piney Branch Parkway east of Sixteenth Street, Klingle Road Valley, and Patterson tract. Especially do I wish to call your attention to the rapid encroachment upon Piney Branch and Klingle Road Valley. They have already been much reduced in area, and it is my firm belief that Piney Branch Parkway will be lost if not acquired within the next year.

Klingle Ford Valley should be made the link connecting Potomac Park on the south with Rock Creek Park on the north. This would eliminate the necessity of traffic passing through the Zoological Park, which is a playground for children, where traffic should be restricted. If this link is acquired, it will make a continuous park from Haines Point, at the extreme south end of Potomac Park, to the extreme north end of Rock Creek Park, at the northerly boundary of the District. There is probably nowhere to be found such a beautiful chain of parks, with its varying scenery, from the natural, rugged, wooded hillsides to the beautifully created parks along the Potomac.

CIVIL WAR FORTS.

Steps should be taken to preserve and connect the various 40 or more fort sites and batteries which were constructed for the defense of Washington during the Civil War. Some have already been destroyed by the progress of improvements, but some are still well preserved. All are of great historic interest. Beautiful boulevards on high ground overlooking the city should be constructed connecting these sites.

SMALL PARKS.

The appropriation for small parks to be acquired at the intersection of streets has been reduced from time to time from $25,000 to $5,000 for the current year. Many of such small areas have been acquired, and a number have been beautified, much to the betterment of the neighborhood in which they are located. The acquisition of these small areas frequently prevents the construction of some cheap and unsightly improvements.

There were 24 small park areas before the courts for condemnation during the past year, some of which have been confirmed. It is believed that this appropriation should be increased and continued.

STREET PARKING.

In the annual report of this office of last year attention was called to what was believed to be a desirable thing to accomplish, that is, to have a uniform treatment for parking space within the street lines in the residential districts.

A specific case might be called to your attention by citing Sixteenth Street. The title to this land is in the Federal Government, under the jurisdiction and control of the commissioners. The property owner has the benefit of this parking area in his front yard, for which he pays no rent or taxes. It is believed that this area might be beautified and the appearance of the residential streets much improved.

To convince one of this is to examine the parking in some newly developed subdivision, where the promoter has developed the parking area himself in some uniform method. It is far in advance in its appearance to the older parking space where no attempt has been made to uniformity. In the latter case, some are on terraces and some are without terraces, and some are without fences or hedges, and some with fences, or hedges; in fact, one might find all conceivable kinds of treatment. It is believed that each block, where practicable, should be similarly treated and the appearance of the city thereby much improved.

It is believed that legislation would be necessary to accomplish this result, and an initial appropriation may be needed, after which it might be reimbursed by assessment against the abutting property owners similar to the establishment and maintenance of sidewalks.

OFFICE FORCE.

Attention was called to the necessities of this office in the estimates submitted for the next fiscal year.

I wish to acknowledge the credit due the employees of this office for the efficient service rendered during the past year. Many of the old employees have become experts in their line of work and deserve more consideration in the matter of pay.

MELVIN C. HAZEN, *Surveyor.*

ASSISTANT TO THE ENGINEER COMMISSIONER.

REPORT OF THE INSPECTOR OF BUILDINGS.

WASHINGTON, D. C., *August 15, 1923.*

SIR: During the past year the most important work of the department, examination and checking of plans, has been handled by an entirely new organization. The force of engineers and computers, previous to their employment in this department, were, with the exception of one man, without any practical experience and training.

Many of the plans presented involve the most complex structural details, requiring the most careful analysis and computation. By close supervision of the work of this branch of the department, by personally checking some of the most important plans, delay in issuance of permits was reduced to a minimum consistency with accurate and complete checking of the essential structural details.

By close application and by intelligent appreciation of the work coming before them during the year, the engineering force at this time has reached a state of efficiency which qualifies them to pass upon any work of a structural nature that comes before the department.

At the peak period these men worked early and late, and at times on Sundays, to expedite the work and to minimize the expense to the building public. Their loyalty and willingness to give their time to the District service is worthy of the highest commendation and better remuneration. Unless provision be made for increased compensation, now that the force has reached its present state of efficiency, I fear, in the light of past experience, that now, being trained as they are in the work of this department and having become capable and valuable, that their services will be solicited by outside interests if their compensation is not made commensurate with the qualifications and ability necessary to satisfactorily perform the work that comes before them.

The present force of field inspectors of buildings is composed largely of new men. As these men all have had practical experience, a familiarity with the building code and zoning regulations fits them very well for the practical work of inspection.

Of the clerical force, nine in number, seven are entirely new to the work of the office. It will, I am sure, improve in efficiency and capability.

In addition to the volume of building work handled by the department during the year, a revision of the building code has been prepared. This has been a task of stupendous proportions and every channel has been explored with the view to preparing a code that will embody the best and most up-to-date standards and requirements.

It has been the practice during the year, as far as practicable, to issue permits to build to licensed builders only. In this connection I submit for the special consideration of the commissioners the suggestion that permits to build be issued to licensed builders only whose competency has been determined by examination before a qualified board appointed by the Commissioners of the District of Columbia. In the determination of competency full weight should be given for practical knowledge as well as technical training and experience.

This is a matter that has recently been given consideration by the American Society of Civil Engineers. A committee appointed by the society October 18, 1922, charged with the general study of structural safety in buildings made an exhaustive study of the question and presented a report at a meeting of the society May 16, 1923, most of which is reproduced in the Engineering News Record of July 19, 1923.

Quoting from the report under the head of "Remedial proposals":

Several building reform proposals were advanced at the section meeting of October 18, 1922. The three principal ones are: (*a*) That of J. B. French, requiring that a structural engineer certify to the safety of any building of public assembly before it is opened to use; (*b*) that of R. P. Miller, restricting building permits to responsible persons registered with the city building department; and (*c*) that of L. D. Rights, making the owner legally liable in case he fails to employ a competent architect, engineer, and superintendent.

The Miller and French proposals if applied effectively would have been of value under the conditions of some of the recorded failures. In many other failures, however, they would not have made the work safe; additional changes in building methods and control would have been required. The Miller plan, a direct attempt to eliminate unfit persons from direction of building, approaches closely to effective cure of the existing evils, but its weakness in failing to provide technically competent conduct of work is vital. Basing the grant of a permit on "responsibility" in place of competence is believed to be open to decisive objections. Yet the plan has the great merit of being the readiest and simplest of the remedies for building evils so far proposed. The committee believes that, however modified, it should include the French plan, which is a necessary element in building reform.

To have those engaged in the construction of buildings demonstrate their fitness for conducting a business in which the life and limb of the public is involved is believed to be a proper and necessary requirement.

As a safeguard to the health of the public, those who wish to practice medicine must have a certificate from duly qualified authority before they may legally engage in the profession. To secure a chauffeur's license, the applicant is required to pass an examination to show qualifications to operate an automobile.

Under existing conditions here and everywhere in the country permits to build are issued to anyone, regardless of competence. In connection with the adoption of a revised building code, I believe it eminently fitting that the District of Columbia should initiate this most important step for the better protection of the life and limb of the public.

JOHN P. HEALY,
Inspector of Buildings.

ASSISTANT TO ENGINEER COMMISSIONER.

Statement of permits issued from July 1, 1922, to June 30, 1923,

	Number.	Value.		Number.	Value.
Brick:			Brick—Continued.		
Apartments	81	$12,117,500	Theaters	2	$150,000
Auditorium	1	400,000	Transformer station	1	7,000
Auto repair shops	2	75,000	Warehouses	10	608,450
Auto sales room	1	175,000	Hollow tile:		
Banks	3	288,000	Dwellings	10	109,750
Bank and office building	1	300,000	Garages	18	7,500
Cathedral addition	1	675,000	Office	1	200
Churches	12	721,500	Concrete:		
Clubhouse	1	10,000	Dwellings	24	81,300
Convent	1	50,000	Garages	37	20,300
Dwellings	1,608	14,487,600	Paint shop	1	40,000
Factories	4	112,500	Storage plant	1	60,000
Film studios	2	128,000	Store	1	1,200
Garages	606	1,549,763	Metal:		
Gasoline stations	3	9,053	Garages	2,154	491,133
Home	1	115,000	Sheds	20	12,420
Hotels	3	6,678,350	Frame:		
Manufacturing plants	4	133,870	Café	1	1,000
Market	1	59,000	Churches	2	27,500
Museum	1	994,081	Dwellings	818	4,521,550
Offices	11	2,412,025	Garages	244	84,967
Office buildings	7	602,000	Office	1	500
Office and warehouse	2	180,000	Repairs	620	242,891
Repairs	1,923	3,776,580	School	1	13,000
Schools	4	513,000	Sheds	279	70,089
Service stations	2	25,553	Machinery:		
Shops	2	10,000	Boilers	3	700
Stables	3	40,800	Elevators	110	496,149
Storage buildings	4	910,400	Motors	585	643,318
Stores	142	792,646			
Store and apartments	4	1,037,000	Total	9,416	57,638,638
Store and dwelling	8	57,500	Awnings	180	14,400
Store and flats	19	156,000	Signs	3,700	37,000
Store and office	1	50,000			
Tanks (brick base)	2	20,000	Grand total	13,296	57,690,038
Temple	1	285,000			

The following summary shows the distribution of improvements in the respective sections of the District and the values of same:

	Buildings.	Repairs, etc.
Northeast	$1,445,780	$347,904
Southeast	1,880,339	278,091
Northwest	18,496,000	3,108,487
Southwest	1,153,375	113,903
County	29,086,008	1,728,751
Total	52,061,502	5,577,136
	5,577,136	.....
Sum total [1]	57,638,638	.....

[1] Does not include awnings or signs, the values of which are estimated. Grand total for all building operations, $57,690,038.

Comparative statement for years 1922 and 1923.

	New buildings.	Repairs, etc.	Dwellings.	Apartments.	Business buildings.
1923	3,478	5,938	2,460	81	937
1922	3,510	5,323	2,397	60	1,053
Increase or decrease	32	615	63	21	116

During the year 1923 there was a decrease of 32 in the number of new buildings erected and a decrease of 116 in the number of business

buildings below the previous year, 1922. However, there was an increase of 21 in the number of apartments, an increase of 63 in the number of dwellings, and an increase of 615 in the number of repairs over the year 1922.

Valuation of building operations, including awnings and signs:	
1923	$57,690,038
1922	36,223,089
Increase	21,466,949
Permits issued, number, including awnings and signs:	
1923	12,191
1922	10,301
Increase	1,891

Estimated number of buildings in the District of Columbia.

	Brick.	Tile.	Concrete.	Stone.	Frame.
1923, erected	2,562	29	64	.....	823
1923, razed	110	.....	.....	.....	126
Total	2,452	29	64	.....	697
1922	71,646	360	212	2	28,046
Total estimated number standing	74,098	389	276	2	28,743

During this period there were issued 2,585 conforming certificates of occupancy and 118 nonconforming certificates, the fees therefor totaling $3,523.50.

REPORT OF THE INSPECTOR OF PLUMBING.

WASHINGTON, D. C., *August 13, 1923.*

SIR: I am handing you herewith the forty-first annual report of the plumbing inspection division of the engineering department.

During the last year there were 29,269 inspections on plumbing work in new buildings, 3,709 inspections of plumbing work in old buildings, and 9,489 inspections in connection with complaints made of conditions of plumbing and guttering and spouting in old buildings, making a total of 42,467 plumbing inspections made by the general field force of the office. There were also 923 inspections made of District government or United States work, and 2,155 special inspections or visits made by the head of the office, and principal assistant in connection with appeals from the District inspectors, police court cases, conferences with witnesses of illegal plumbing installation, etc., making a total of 45,545 inspections made by the office during the year. This is an increase of 3,820 inspections over the number of inspections made during the last fiscal year. The total number of inspections made by the field force, divided by the actual number of days on duty, shows that the average work was nearly 15 inspections per man per day. The largest number of inspections in any one day was 35.

OFFICE WORK.

The amount of work performed by the office force is slightly in excess of the last fiscal year, there having been accomplished a total of practically 34,600 separate and distinct operations, such as writing of letters and indorsements, preparation of notices, etc.

COMPLAINTS.

There were 9,489 complaint inspections made during the year. This comprises practically one-fourth of the inspections made by the field force and more than one-half of all of the operations of the clerical force were caused by complaints of insanitary plumbing in old houses or defective downspouts and gutters.

REGULATIONS.

During the past fiscal year there have been several minor changes made in the plumbing regulations looking to the simplification of plumbing work and to bring the language of the regulations into conformity with present practice. Only one change of real moment was made when an amendment was promulgated by the commissioners permitting the use of cast-iron or brass water supply pipe in place of lead pipe, which has proven unsatisfactory in several ways. By reason of the lesser cost of the above materials there will be a very considerable saving to the householders.

POLICE COURT CASES.

During the year nine warrants were obtained, three for violation of the plumbing regulations by householders, and six against unlicensed plumbers doing improper work. Three of these cases were disposed of by reason of compliance with the regulations; and fines were imposed in six cases. The total amount collected from fines in the six cases was $95.

COMPULSORY DRAINAGE.

During the last fiscal year 151 cases of sewer and water connections and other plumbing work were referred to this office by the health office and other divisions of the District government for prosecution under the terms of the drainage act and the nuisance act, the cost of which was to be assessed against the property. In most of these cases the required repairs were made by the agent or owner after proper notice and the work was done by this office in but 27 cases and the cost assessed. At the close of the fiscal year there were still pending in this office 16 cases which could not be immediately prosecuted by reason of legal questions, questions of ownership, etc., and there are 10 cases still under notice.

PLUMBING BOARD.

The plumbing board held 24 meetings and examined 72 applicants, of which 16 passed and were granted license, so that at the close of the fiscal year there were 249 registered master plumbers in the

District, about 207 of them being actively engaged in business; there were also 8 registered gasfitters.

PUBLIC CONVENIENCE STATIONS.

There were in operation throughout the year four convenience stations, open from 6 a. m. until midnight, with two shifts of attendants, each working 9 hours per day. The largest station, that at Seventh Street and Pennsylvania Avenue NW., accommodated 6,383,040 persons; that at Thirteen and a half Street and Pennsylvania Avenue NW.. 2,722,100; that at Ninth and K Streets NW., 2,992,000; and that at Fifteenth and M Streets NE., 331,900, making a total patronage of about twelve and one-half million. The cash receipts for the year amounted to $8,441.12 and consisted of 5 cent fees received for use of pay toilets, rental of clean towels at 2 cents each, commissions received on telephone service, bootblack stands, etc., being about 40 per cent of the actual cost of operation of the stations.

The need for new stations is being continually pointed out, and it is recommended that an effort be made to add to the number of stations in the business section.

A. R. McGONEGAL,
Inspector of Plumbing.

The INSPECTOR OF BUILDINGS.

REPORT OF INSPECTOR OF STEAM BOILERS.

WASHINGTON, D. C., *August 7, 1923.*

SIR: I have the honor to submit the following lists of steam boilers inspected, fees received, and expenses incurred for the fiscal year ending June 30, 1923:

Boilers inspected	460
Boilers inspected for District of Columbia, no fee	35
Boilers condemned as unfit for further use	6
Cases of scale and deposit	86
Cases of defective steam gauges	4
Cases of defective tubes	56
Cases of pressure reduced	7
Total amount received	$2,300
Total amount expended	325
Compensation of inspector	1,975

E. F. VERMILLION,
Inspector of Steam Boilers.

The INSPECTOR OF BUILDINGS.

REPORT OF THE PERMIT CLERK, ENGINEER DEPARTMENT.

WASHINGTON, D. C., *August 1, 1923.*

SIR: I have the honor to submit the following report of the permit clerk's office, giving the number of permits issued during the fiscal year ended June 30, 1923:

Water connections	2,992
Repairs	692
Specials (no fee)	97
Sewer connections	3,041
Repairs	758
Specials (no fees)	974
Gas mains and connections	3,140
Repairs	241
Specials (no fee)	24
Electric construction, underground connections	3,264
Repairs	33
Conduits	593
Manholes	274
Air pipe lines and private conduits	9
Fences to inclose parkings	333
Guard stones in alleys	15
Pave parkings	65
Poles, erect, replace, and remove	1,217
Miscellaneous	25
	17,787
Permits for work of various kinds in public space	5,397
Total permits issued	23,184

Fees of $1 were paid for 16,692 permits; permits for which no fees were paid, 6,492.

Record cards were made of all files referred to this office, permits issued, or reports made, and files returned to the divisions having supervision of inspections of work for which permits were issued.

Applications were filed according to location, and report of excavations in public space were made to the engineer of highways for necessary repairs.

H. M. WOODWARD,
Permit Clerk.

The INSPECTOR OF BUILDINGS.

REPORT OF ASSISTANT ENGINEER COMMISSIONER WOOD.

WASHINGTON, D. C., *September 7, 1923.*

SIR: I have the honor to transmit herewith the annual reports of operations of the various divisions and offices under my immediate supervision for the fiscal year ended June 30, 1923.

During the year a committee on the street lighting needs of the District of Columbia was appointed, and its report is designated as file E. D. 175992–2. The committee was made up of properly qualified technical men representing various fields interested in street lighting. The report includes a comprehensive survey of thoroughfares in the District of Columbia and establishes a standard of lighting for each respective street. The lighting as approved should be put into execution as soon as the necessary funds can be secured by appropriations.

During the year the office of the municipal architect has secured a comprehensive plan for the ultimate development of the penal reservation at Occoquan and Lorton, Va. This marks an important step in the realization that the District of Columbia has many reservations of considerable acreage each, for which no complete plans of development have yet been prepared. Within the next fiscal year the office proposes to inaugurate great plans for the proposed Home for the Feeble-minded near Laurel, Md., the Home for the Aged and Infirm at Blue Plains, D. C., and the grounds of Gallinger Hospital as required by modification. There yet remains the grounds of other District institutions which should be considered in group relation. This work has too long been neglected. Steps should be taken in the future to prevent the construction of any building without a study of its relation to future buildings.

A suggestion for the wharf treatment of the Washington Channel, supplemented by drawings, was prepared in February, 1923, and is designated as file E. D. 167769/4. The proposed development contemplates a two-level quay system, in which a unique recognition of Washington's national aspect is the basic thought. In its present form the plan is sufficient to indicate the nature of the treament, yet plastic enough to be susceptible of such modification as mature study by properly qualified experts may require. It is the only tangible plan in existence and should be given a definite identity in so far as its general characteristics are concerned.

There is an obvious need for more use of the particular talents of the municipal architect's office in the study of distribution centers in the District of Columbia. Certain traffic conditions can be simplified and even completely solved by design. Notable examples are the approaches of the new Key Bridge, and the eight-point intersection of Maryland Avenue at Bladensburg Road NE. Suggestive sketches of these projects have been prepared in the municipal architect's office, but are not of sufficient professional merit to be considered finished. Such general studies will require the services of technical specialists of a nature not heretofore in the employ of the District government, and for the employment of whom a special appropriation should be sought.

The office of the municipal architect is to be commended for its studies in local planning which have been prepared. This work should be carried on to the end that worthy projects may be prepared for proper presentation. In this category I would mention specifically the need of a careful survey for better traffic routing, and the improvement in appearance of traffic routes entering the city, both rail and highway.

The superintendent of the water department has continually sought to eliminate the wastage of filtered Potomac water. It is now proposed to require that all filtered water used by District and Federal functions be carefully metered, and charges made therefor at the legal rates; and that all revenues accruing therefrom be paid into the Treasury of the United States. This will provide a precise and effective surveillance of water consumption, and an accompanying remedy.

The installation of a high-pressure fire-protective service in the congested fire district is one for the almost exclusive benefit of com-

mercial and governmental interests. It should be so recognized, and financed by general appropriations. In no sense could receipts from private-water revenues be considered available for this obvious public benefit.

J. E. Wood,
Captain, Corps of Engineers, United States Army,
Assistant to Engineer Commissioner.

The Engineer Commissioner.

REPORT OF THE ELECTRICAL ENGINEER.

Washington, D. C., *September 1, 1923.*

Sir: I have the honor to submit the following report of the operations of the electrical department for the fiscal year ended June 30, 1923.

STREET LIGHTING.

The street-lighting system, at the beginning of the fiscal year, consisted of 11,135 gas lamps and 9,573 electric lamps (783 arc, 8,790 incandescent); on June 30, 1923, there were 11,316 gas and 9,940 electric (787 arc and 9,153 incandescent), an increase of 181 gas, 4 arcs, 363 incandescents (367 electric), a total of 548 lamps of all kinds, compared with 366 in 1922. Of the 655 lamps newly connected (gross) 437, or fully two-thirds, were either "designation" lamps or the lowest powered gas or electric. The increase in aggregate candlepower of the street-lighting system is from approximately 1,752,100 to approximately 1,842,400, about 5.2 per cent. The increase of provision has been less than the increase of need, due to newly developed areas and increase of traffic. The necessity of a much higher standard of street lighting throughout the District, in the interest of safety and convenience of both drivers and pedestrians, is more and more evident. Plans and studies, both as to details of equipment and on comprehensive plan of treatment, have progressed; small temporary experimental installations have been made and studied; a representative committee on lighting needs, appointed by the commissioners, has in preparation plans, designs, map and estimates for a comprehensive project of street lighting suitable for the Capital City. The committee will, without doubt, make specific recommendations, including that funds be sought to execute the project in a term of years, not exceeding five.

ARC LIGHTING.

There has been an increase of 4 in the 4-ampere magnetite arc lamps, to a total of 787 arc lamps connected June 30, 1923. Two of these were added on M Street NW., between Thirty-fourth and Thirty-fifth Streets, to improve the situation at north approach to new Francis Scott Key Bridge and two on south side of B Street NW., between Seventh and Ninth Streets, to relieve an especially bad condition.

INCANDESCENT ELECTRIC LIGHTING.

The number of incandescent lamps added (other than designation lamps) is 356, discontinued 20, a net increase of 336, being 177 of 60 candlepower, 27 of 100, 79 of 250, 2 of 400, and 51 of 600 candlepower. The transfer to this department at the beginning of the fiscal year of the roadway lighting of the Highway Bridge across the Potomac River and its approaches added to the system forty-seven 600, four 250, and seven 100 candlepower lamps and the transfer of two of the islands of safety in Union Station Plaza added four 600-candlepower lamps; an improvement on East Capitol Street, Thirteenth to Eighteenth Streets, at and near the New Eastern High School, added two 400, nine 250, and twenty-six 100 candlepower lamps in replacement of gas lamps; thirty-nine 250-candlepower lamps were added, replacing gas, in Seventeenth Street NW. and in Fifteenth Street NW., between K Street and Massachusetts Avenue; thirteen 250-candlepower lamps were added in an experimental equipment in Rhode Island Avenue NW., between Seventh and Ninth Streets; eight 100-candlepower lamps were added, replacing 60 candlepower, at intersections of Georgia Avenue NW., Harvard to Newton Streets; twenty-nine 60-candlepower lamps were added in Takoma Park section; ten 60-candlepower lamps were added, in special fixtures, for traffic warning, at five railway viaducts crossing streets; the remainder of the additions were individual or in lots of six or less, widely scattered.

The total number of electric incandescents connected June 30, 1923, was 8,942, compared with 8,606 at the close of the preceding year.

MANTLE GAS LIGHTING.

The number of mantle gas lamps added was 263, discontinued 86, a net increase of 177. The total mantle gas lamps connected June 30, 1923, was 10,911 (10,759 60-candlepower, 152 120-candlepower) compared with 10,734 (10,617 60-candlepower, 117 120-candlepower) at the close of the preceding year. The additions were individual or in lots of six or less, widely scattered. It is the present intention to replace gas lighting by electric lighting as early and as rapidly as practicable and extensions of gas lighting are made only to meet pressing needs.

DESIGNATION LAMPS.

The number of designation lamps added was 32, 5 gas and 27 electric, and the number discontinued was 1 gas, a net increase of 31; the 1 lamp discontinued was replaced by electric. Of the designation lamps added, 4 were traffic warning lamps at isles of safety, F Street NW., east of Fourteenth, the remainder fire-alarm-box designation, widely scattered. The total of designation lamps connected June 30, 1923, was 616 (405 gas, 211 electric), as compared with 585 (401 gas, 184 electric) at the close of the preceding year.

LIGHTING ALONG STEAM RAILROADS.

The situation with respect to the several suits brought by the District of Columbia against certain railroad companies for repayment for sums expended for the lighting of streets, avenues, etc., adjacent

to their several rights of way, remains as reported for the past three years. The new trial of typical case in the lower court, necessitated by ruling of the court of appeals, has not been reached. The sum to be added in claim by the operation of the fiscal year is $9,387.04.

SIGNAL SYSTEM.

The fire-alarm telegraph, the police-patrol signal, and the telephone systems have been operated and maintained and each has expanded slightly in the line of natural growth.

Fire-alarm boxes added to the system number 45 (34 public, 11 private), and 2 private boxes were discontinued, a net increase of 43, to a total in service June 30, 1923, of 782 (615 public, 167 private). Boxes connected by underground wires were increased by 37 to a total of 663, including 582 on street posts, and boxes connected by overhead wires increased by 6 to a total of 119.

Among the most important of the recommendations concluding the report of the committee on fire prevention in the city of Washington, dated July 1916, was that additional boxes be installed to secure a certain standard of distribution. While the net increase in this past year of 34 public boxes compares with an average increase in public boxes of $18\frac{3}{7}$ for the seven years since the date of that report, the phenomenal expansion of suburban development leaves the situation no better than in 1916. Increased appropriations permitting an increase of public fire-alarm boxes by not less than 50 per year until the approved standard of distribution is reached, and then of sufficient to maintain that standard, are earnestly recommended as necessary provisions of security.

The switchboard and instruments for enlarging the fire-alarm headquarters apparatus, provided for in appropriation of the preceding year and previously reported as received and partly installed and connected, has progressed to the utilization of 5 of the 10 additional box circuits thus made possible as to headquarters equipment; this relieves what were the most seriously overloaded circuits, but the desirable further redistribution of circuits has been impossible with the restricted provision for distribution and materials and construction costs.

Careful inspection, maintenance and repair service on the apparatus has been maintained.

The number of fire alarms received and transmitted through fire-alarm headquarters was 2,826, compared with 2,033, 1,795, 1,815, and 2,248 in the next four preceding years; this includes 34 "additional" alarms (19 second, 10 third, and 5 fourth), compared with 36 (18 second, 9 third, 5 fourth, and 4 fifth), in the next preceding year. False alarms numbered 210, compared with 181 and 145 in next two preceding years, the false box alarms being under 13 per cent of the total regular box alarms, as compared with above 14 per cent in the next preceding year. The number of regular box alarms was 44 per cent of the total of box and local (exclusive of "additional") alarms, compared with nearly 50 per cent in the next preceding year.

The number of police-patrol boxes added was 3 (1 connected underground and 2 overhead), a net increase of 3, compared with 12

in the next preceding year, making the total connected June 30, 1923, 490; of these, 385 are connected on underground and 105 on overhead wires.

As distinguished from the fire-alarm boxes, which are on circuits centering at headquarters in the District Building, the police-patrol boxes are on circuits centering at the respective police-precinct stations, of which there are 12 in 11 precincts, the seventh precinct having a substation at Tenleytown. Up to 1910 each police-patrol box contained an electromechanical signaling instrument, similar to a messenger-call box, and a telephone, and the boxes were connected "bridged" or in multiple, several on a circuit. In that year the patrol boxes of the first precinct were modernized by the elimination of the call-box mechanism and by connecting each box with telephone only, on separate circuit. This change proved to be such an improvement and such an advantage in police administration that the police and electrical departments joined in the next year in urging the immediate similar modernizing of the entire police-patrol system. Funds were provided such that the system centering at one station was so modernized in each of the years 1912, 1913, 1914, 1915, 1916, 1918, and 1921—that is, five in the first five years and two in the past seven years—the ninth, tenth, and eleventh precincts and the substation of the seventh precinct still remaining in the obsolete class. The institution of twelfth precinct and the rearrangement of the patrol boxes in its territory made up of a portion of each the ninth and tenth, both provided for, will effect the modernizing of the boxes to be included in the new precinct.

Estimates have been submitted on the modernizing of the remainder of the system, and provision for completion of this long-needed improvement is urged. The police department is now urging the installation of further steps of modern practice, of undoubted value, which are not practicable until the other step has been taken.

The number of telephones added, connected to the two private branch exchange switchboards in the jurisdiction of this department, the main District of Columbia P. B. X. Main 6000, and the fire-alarm headquarters P. B. X. Main 20, was 26, and 11 were discontinued; a net increase of 15, compared with 21 for the year next preceding.

Connected to other District P. B. X. switchboards, which are tie line connected to Main 6000 switchboard, additions were made as follows: Police department, 9 added, 4 discontinued, net added, 5; water department, 1; Public Library, 2; and of schools, Dunbar High, 1; McKinley Manual Training, 2; Miner Normal, 1; Franklin, 5; also new installations of P. B. X. switchboards, tie connected to Main 6000, Tuberculosis Hospital with 8 and New Eastern High School with 50 telephones; also an addition of 7 in the police-patrol service. The number of telephones on the District of Columbia system was thus increased by 97 (compared with 26 in the next preceding year) to a total connected June 30, 1923, of 1,550.

The number of cells of storage battery in service on fire alarm, police patrol, and local circuits remains unchanged at 2,174.

The distribution equipment for the composite-signals system (fire alarm, police patrol, and telephone) has been affected by the installation of approximately 8 miles of underground cables containing approximately 449 miles of conductors, the withdrawal of approximately one-half mile of underground cable, of approximately 6½

miles of conductor, and the installation of approximately one-fourth mile of aerial cable containing approximately 3½ miles of conductor, a net increase of approximately 7¾ miles cable, 446 miles conductor. Grand total of composite distribution in service June 30, 1923, 179.004 miles of cable, containing 7,081.047 miles of conductor.

This distribution system is inadequate to meet the demands of the services and in parts is in precarious condition, threatening continuity of important communications service.

Further consideration of utilizing radio communication has been deferred.

POLES AND OVERHEAD WIRES.

The regulation of the erection of poles, of the stringing of overhead wires, and of the maintenance of same in safe condition in the streets and other public spaces has been carried on. The operations of the public utility companies have resulted in an aggregate net increase during the year of 1,045 poles (922 line and 123 guy), bringing the record total of all electric poles on June 30, 1923, to 21,959 (20,612 line, 1,347 guy). The list of pole owners comprises the United States, the District of Columbia, and 17 companies (the steam railroads being lumped as one); more than 77 per cent of the poles are owned by, and practically all of the year's increase is by, two of the companies; the United States owns 298 and the District of Columbia 479, a combined Government ownership of about 3½ per cent of the total; the only change in Government ownership in the year is the taking down of 6 line poles by the District of Columbia. The increase of total, 1,045, compares with 912 and 348 of the next two preceding years, it being a second year of exceptional activity due principally to exceptional suburban development; the number of telephone poles in streets and avenues within "the prescribed area" of the act of Congress regulating the use of telephone wires in the District of Columbia, approved June 30, 1902, has not been changed. The policy of favoring and sometimes inducing joint use of poles has been continued and has resulted in materially retarding the increase in number of poles.

ELECTRIC INSPECTION—WIRES AND APPARATUS.

In the operations under the act of Congress to regulate electrical wiring in the District of Columbia, approved April 26, 1904, and the regulations thereunder:

The total number of permits issued in connection with the installation of wires and apparatus on private property was 9,791, compared with 8,029 and 6,217 in the next two preceding years.

Fees paid to the collector of taxes, $16,164, compared with $13,861 and $11,626.

Number of inspections recorded, 22,817, compared with 17,284 and 16,170.

Reference is made to the reports of the past several years in the matter of need of increased personnel for this service and the statements and recommendations therein again repeated. The situation was very bad three years ago and has grown much worse each year.

MISCELLANEOUS WORK.

The service of this department in cooperation with the municipal architect and for other District departments or divisions, in consulting and counseling, in preparing plans and specifications for and in supervision of electrical work, has been exceptional; plans and specifications were prepared, are being prepared, and the introduction of electrical work has been supervised where started in municipal properties: 1 high school, 3 junior high schools, 12 grade schools, 2 correctional institutions, 1 hospital, 4 police stations, 1 fire-engine house, and 1 wharf.

I wish to record my appreciation of the work done by the employees of this department.

WARREN B. HADLEY,
Electrical Engineer, District of Columbia.

ASSISTANT TO THE ENGINEER COMMISSIONER.

Fire alarms received and transmitted.

Regular box alarms	1,227
Alarms received from telephone stations	5
Local alarms	1,560
Second alarms	19
Third alarms	10
Fourth alarms	5
Total	2,826
False alarms:	
Box	156
Local	54

Lamps of all kinds in service June 30, 1923, as compared with June 30, 1922.

Kind of lamp.	1922	1923
Mantle gas, single burner	10,617	10,759
Mantle gas, double burner	117	152
Electric arc:		
6.6-ampere magnetite	283	283
4-ampere magnetite	500	504
Electric incandescent:		
600-candlepower, series		51
400-candlepower, series		2
250-candlepower, series	89	168
200-candlepower, multiple	64	64
100-candlepower, series	4,060	4,087
100-candlepower, multiple	98	98
60-candlepower, series	4,021	4,179
60-candlepower, multiple	274	293
Street designation:		
Gas	401	405
Electric	184	211
Total	20,708	21,256

Net increase during year, 548 lamps.

Distribution of police patrol boxes June 30, 1923.

Precinct.	Wall boxes.		Booths.		Total.
	Underground.	Overhead.	Underground.	Overhead.	
First	38				38
Second	28				28
Third	50				50
Fourth	37	2			39
Fifth	44	2			46
Sixth	29				29
Seventh	23	4			27
Eighth	29				29
Ninth	38	23		1	62
Tenth	52	11	2	2	57
Eleventh	4	35		1	40
Subprecinct, Tennallytown	11	22		2	35
Total	[1] 383	99	2	6	490

[1] Thirteen of these boxes at following locations are not on posts: 3, Union Station; 1, engineer stables; 1, Takoma Park, watch box; 1, Treasury Department; 1, Agricultural Department; 1, Department of Justice; 1, Pan American Union Building; 1, Walter Reed Hospital, information bureau; 3, in special booths erected by the police department at Fourteenth and Kennedy Streets NW.; Twenty-second Street and Rhode Island Avenue NE.; and Connecticut Avenue and McKinley Street NW.

Telephones connected to the District system June 30, 1923.

Offices of the District Building	205
Outside offices and institutions	115
Residences	4
Public schools	252
Fire department	59
Police department, private branch exchange	70
Water department, private branch exchange	45
Franklin School, private branch exchange	44
Western High School, private branch exchange	18
McKinley Manual Training School, private branch exchange	20
James Ormond Wilson Normal School, private branch exchange	30
Miner Normal School, private branch exchange	14
New Central High School, private branch exchange	36
Dunbar High School, private branch exchange	23
Eastern High School, private branch exchange	50
Public Library, private branch exchange	24
Washington Asylum and Jail, private branch exchange	25
District repair shop, private branch exchange	6
House of detention, private branch exchange	8
Tuberculosis Hospital, private branch exchange	8
Police patrol service	494
Total	1,550

There are also 28 portable telephone sets in service, the property of the District of Columbia, used by the fire department and the electrical department.

Signals distribution system.

	Cables.	Conductor.	Cables.	Conductor.
Underground:	*Miles.*	*Miles.*	*Miles.*	*Miles.*
Installed, 1923	7.877	449.240		
Withdrawn, 1923	.441	6.720		
In service June 30, 1923			172.976	6,902.599
Aerial:				
Installed, 1923	.227	3.636		
In service, June 30, 1923			6.068	178.448
Total			179.044	7,081.047

ELECTRIC INSPECTION—WIRES AND APPARATUS.

The following tables show the amount of work performed by this department in connection with electric wiring inspections:

Notices received from the inspector of buildings of permits indicating electric wiring:	
Building	3,503
Machinery	372
Signs	176
Total	4,051
Permits issued by the electrical department for installations:	
Without fee (ordered by District of Columbia, etc.)	98
Covered by building permits	3,716
Not covered by building permit	5,817
For temporary work	126
Quarterly (maintenance of plants, etc.)	34
Total	9,791
For temporary use of current	518
Total	10,309
Certificates issued:	
Final (including six without fee)	6,451

	Number.	Approximate kilowatts.
Lamps and apparatus installed:		
Lamps, incandescent	193,671	7,746
Motors	546	1,157
Devices, miscellaneous	1,054	368
Blank outlets	34	
Subtotal	195,305	9,271
Transformers	11	743
Total	195,316	10,014

Defective wiring discovered and reported, extra of routine inspection work	239
Number of notices of defective wiring sent	2,050
Requests for inspection (not related to work already under permit)	6
Miscellaneous jackets (specifications, etc., for District of Columbia work, etc.)	656
Notices received from the superintendent of licenses, leading to original inspection or periodic (annual) reinspection of theaters, hotels, assembly halls, etc	170
Work of inspectors of electric wiring from July 1, 1922, to June 30, 1923:	
Inspections in private buildings (not including theaters and moving-picture theaters)	21,648
Inspections in municipal buildings	527
Inspections in United States Government buildings	10
Inspection in theaters (including moving-picture theaters) including reinspections, periodic (annual), and occasional, in moving-picture theaters (more frequent periodic inspections being made by the fire marshal), and periodic reinspections (weekly or more frequently, if bill changes) of theaters	632
	22,817
Fees paid to the collector of taxes:	
For permits	$16,164

MISCELLANEOUS WORK.

This department made plans and specifications for and supervised the introduction of electric work (where started) in the following municipal properties:

Completed:
- New Eastern High School, lighting, power, telephones, clocks and bells, laboratory equipment, and lighting fixtures.
- Monroe School addition, lighting and power.
- Eaton School addition, lighting and power.
- Wheatley School addition, lighting and power.
- Buchanan School addition, lighting and power.
- Kingsman (Lincoln Park School), lighting and power.
- Bell School, lighting and power.
- Psychopathic group, Gallinger Municipal Hospital, lighting fixtures.
- Temporary electric-generating plant, Gallinger Municipal Hospital.
- Wharf No. 6, lighting.
- Industrial Home School, lighting and power.
- New electric generator, workhouse, Occoquan, Va.
- No. 2 precinct police station cell corridors, lighting.
- Power plant, Gallinger Municipal Hospital, lighting.

Under construction:
- Macfarland Junior High School, lighting, power, telephones, clocks, and bells.
- Langley Junior High School, lighting, power, telephones, clocks, and bells.
- Smothers School, lighting, power, and telephones.
- Shaw Junior High School, clock and bell system.
- Nurses' home, Gallinger Municipal Hospital, lighting fixtures.

This department prepared plans and specifications in the office of the municipal architect, District of Columbia, and supervised the introduction of electric work (where started) in the following municipal properties:

Under construction:
- Henderson School, lighting, power, and telephones.
- Garrison School, lighting, power, and telephones.
- Lovejoy School addition, lighting, power, and telephones.
- Chain Bridge School, lighting, power, and telephones.
- Strong John Thomson School addition, lighting, power, and telephones.
- Head house, wharf No. 6, lighting, power, and telephones.
- No. 12 precinct police station, lighting, power, and telephones.

Prepared but not started:
- Cottage for colored children, Blue Plains, lighting.
- No. 7 precinct police station cell corridor, lighting.
- No. 9 precinct police station cell corridor, lighting.
- No. 16 fire-engine house, lighting, power, and telephones.

REPORT OF THE MUNICIPAL ARCHITECT.

WASHINGTON, D. C., *September 29, 1923.*

SIR: I have the honor to submit herewith the fourteenth annual report of the office of the municipal architect for the fiscal year ended June 30, 1923.

The work in the municipal architect's office consists of the preparation of plans, specifications, and superintending the construction of all buildings built by the District of Columbia, consisting chiefly of schools, fire-engine houses, and police stations built for the city departments, and, in addition, the preparation of drawings and estimates for new buildings and repairs to existing buildings for the

various municipal institutions, such as the Home for the Aged and Infirm at Blue Plains, the Girls' Reformatory School, National Training School for Boys, and other similar institutions.

The repair shop, which is an adjunct to the municipal architect's office, is charged with the upkeep and repair work of the various buildings of the school system as well as other municipal institutions. A separate report of this department is inclosed herewith.

The development of plans and the construction of buildings at the reformatory and workhouse at Lorton also comes under this office, and the report of the engineer in charge is inclosed herewith.

SCHOOLS.

At the beginning of the fiscal year the following buildings were under construction:

Four-room addition to the Monroe School.
Four-room addition to the Deanwood School.
Twelve-room addition to the Wheatley School.
Eight-room addition to the John Eaton School.
Eight-room addition to the Lucretia Mott School.
Eight-room building known as the Richard Kingman School.
Eight-room addition to the Buchanan School.
Eight-room building to replace the Bell School.
Eastern High School.

The above buildings, with one or two exceptions, were finished on time, ready for the beginning of school, and were furnished and taken over by the school board.

NEW WORK.

School building to replace the Smothers School, located between Forty-fourth, Forty-fifth, Clay, and Brooks Streets NE. By the act of June 16, 1921, $70,000 was appropriated for the erection of a four-room building. Advertisement for bids for the construction of this building was made November 10, 1921, but the bids were rejected, as they exceeded the amount of the appropriation. Contract was executed March 2, 1923, with David J. Phipps in the sum of $73,538. Expiration of contract time, September 5, 1923. The work was completed September 22, 1923. Cost to date, $74,404.50. The direct system of heating and ventilating will be installed, but it will eventually be changed to the split system. Cubic contents, 207,640 cubic feet. Cost per cubic foot, 45.3 cents.

Addition to the Lovejoy School, located at Twelfth and D Streets NE. By the act of June 29, 1922, $125,000 was appropriated for the erection of an eight-room addition. Contract was executed March 16, 1923, with the Schneider-Spliedt Co., for the construction of the addition, including plumbing, electrical, heating, and ventilating work, in the sum of $115,900. Expiration of contract time, September 27, 1923. It is expected that the work will be completed about October 16, 1923. Cost to date, $121,634. The split system of heating and ventilating will be used in this building. Cubic contents, 306,510 cubic feet. Cost per cubic foot, 37.81 cents.

Addition to the Garrison School, located on Twelfth Street, between R and S Streets NW. By the act of Congress of June 29,

1922, $140,000 was appropriated for the erection of an eight-room addition. Contract was executed April 17, 1923, with George E. Wyne, for the construction of the addition, including plumbing, electrical, heating, and ventilating work, in the sum of $136,350. Expiration of contract time, November 30, 1923. It is expected that the work will be completed about November 30, 1923. Cost to date, $136,604.64. The direct-indirect system of heating and ventilating will be used in this building. Cubic contents, 328,470 cubic feet. Cost per cubic foot, 41.51 cents.

Bancroft School, located at Eighteenth and Newton Streets NW., in Ingleside section. By the act of June 29, 1922, $140,000 was appropriated for the erection of an eight-room extensible building. Contract was executed May 11, 1923, with George E. Wyne, for the construction of the building, including mechanical equipment, in the sum of $139,300. Expiration of contract time, January 11, 1924. It is expected that the work will be completed January 11, 1924. The direct-indirect system of heating and ventilating will be used in this building. Cubic contents, 330,349 cubic feet. Cost per cubic foot, 42.17 cents.

Langley Junior High School, located on T Street between First and Second Streets NE. The appropriation act of June 16, 1921, authorized the commissioners to enter into contract for this building at a cost not to exceed $300,000, and appropriated $100,000 for the beginning of the erection. An additional $200,000 was appropriated by the act of June 29, 1922. Contract was executed January 23, 1923, for building, including plumbing, electrical, and mechanical equipment, in the sum of $293,250, with M. Seretto. Expiration September 22, 1923. It is expected that the work will be completed about November 1, 1923. Cost to date, $293,305.50. The split system of heating and ventilating is to be used in this building. Cubic contents, 1,006,792 cubic feet. Cost per cubic foot, 29.13 cents.

Macfarland Junior High School, located on Iowa Avenue between Upshur and Allison Streets NW. The appropriation act of June 16, 1921, authorized the commissioners to enter into contract for this building at a cost not to exceed $300,000 and appropriated $100,000 for the beginning of the erection. An additional $200,000 was appropriated by the act of June 29, 1922. Contract was executed January 23, 1923, for building, including plumbing, electrical and mechanical equipment in the sum of $293,250, with M. Seretto. Expiration, September 22, 1923. It is expected that the work will be completed about October 15, 1923. Cost to date, $291,055. The split system of heating and ventilating is to be used in this building. Cubic contents, 1,006,792 cubic feet. Cost per cubic foot, 29.13 cents.

Chain Bridge Road School, located on Chain Bridge Road between Garfield and Fulton Streets NW. By the act of June 29, 1922, $25,000 was appropriated for the erection of a 2-room building to replace the present 1-room school building. Contract was executed June 12, 1923, with Ennis & Hare for the construction of this building, in the sum of $23,625. Expiration of contract time, October 12, 1923. It expected that the work will be completed about October 12, 1923. Cost to date, $23,625. The direct system of steam heating

will be used in this building. Cubic contents, 59,672 cubic feet. Cost per cubic foot, 39.59 cents.

Head house on Wharf No. 6, located on Water Street between M and N Streets NW. By the act of March 3, 1917, $53,000 was appropriated for the improvement of Wharf No. 6. One of the improvements provided for was the construction of a head house. Advertisement was made and bids were received December 18, 1922, for the construction of the head house, but the bids exceeded the amount remaining in the appropriation. Advertisement for bids was made on revised plans and bids were received May 1, 1923. The bid of Ennis & Hare was accepted and contract entered into with said firm June 12, 1923, in the sum of $9,905. Expiration of contract time, October 12, 1923. It is expected that the work will be completed about October 1, 1923. Cost to date, $9,905.

Police precinct station No. 12, located at Seventeenth Street and Rhode Island Avenue NE. By the act of March 3, 1917, $40,000 was appropriated for the erection of this station house. By the act of June 29, 1922, an additional $20,000 was appropriated for the purpose. Contract was executed June 15, 1923, with the G. G. Loehler Co., for the construction of this station house, including mechanical equipment, in the sum of $55,376. Expiration of contract time, November 15, 1923. It is expected that the work will be completed about December 1, 1923. Cost to date, $55,662.68. The direct system of steam heating will be employed in the building, and the direct-indirect system in the cells. Cubic contents, 163,200 cubic feet. Cost per cubic foot, 33.93 cents.

Police precinct station No. 7, located on Volta Place between Thirty-third Street and Wisconsin Avenue NW. Contract was executed June 29, 1923, with the G. G. Loehler Co., for making alterations in this station house, in the sum of $7,380. Expiration of contract time, October 29, 1923. It is expected that the work will be completed about October 29, 1923. Cost to date within the contract price.

Police precinct station No. 9, located on Ninth Street between E and F Streets NE. Contract was executed June 29, 1923, with the G. G. Loehler Co., for making alterations in this station house, in the sum of $7,213. Expiration of contract time, October 29, 1923. It is expected that the work will be completed about October 29, 1923. Cost to date is within the contract price.

Besides the preparation of plans and specifications for the above buildings, plans and specifications for about 40 other pieces of work, such as heating systems in engine houses, police stations, and school buildings, etc., were prepared in this office, the contract prices therefor amounting to $63,458.

The contracts entered into by this office for the fiscal year beginning July 1, 1922, and ending June 30, 1923, amounted to a total of $1,498,377.

New Eastern High School, located on East Capitol Street between Seventeenth and Nineteenth Streets NE. Contractual limit for building, $1,500,000. Appropriations have been made as follows: A balance of $28,448.65 from the appropriation for purchase of site made available toward construction of building; $300,000 appropriated by act of March 3, 1917; $60,000 by act of June 5, 1920; $240,000 by act

of February 22, 1921; $900,000 by act of June 29, 1922; and $250,000 for equipment by deficiency act of July 1, 1922.

Contract was executed September 10, 1920, for work of making excavations for building; work completed January 29, 1921, at a cost of $41,011; contractor, George Hyman. Contract was executed January 28, 1921, with George Hyman for the construction of foundations and substructure; work was completed November 15, 1921, at a cost of $292,270. Contract was executed with George E. Wyne November 9, 1921, for the construction of the superstructure; the work was completed December 9, 1922, at a cost of $950,318. Furnishing and installing electric lighting fixtures: Contract executed January 23, 1923, with O. R. Evans & Bro.; work was completed March 29, 1923, at a cost of $9,386. Grading of site: Contract executed January 30, 1923, with Latimer & Maloney; work was completed April 7, 1923, at a cost of $16,740. Stage lighting equipment: Contract executed with O. R. Evans & Bro. January 30, 1923; work completed March 22, 1923, at a cost of $3,764. In addition contracts have been executed and orders issued for the equipment for the building to the extent of $250,000. The split system of heating and ventilating is used in this building. Cubic contents, 4,828,900 cubic feet. Cost per cubic foot, 26 cents.

INCREASE IN COST OF BUILDINGS.

The cost of buildings, as indicated by the proposals received during the past year, has shown a steady increase, and it has been with great difficulty that buildings of the present appropriation bill have been put under contract. The last building on which bids were received was an eight-room extensible school at the intersection of Rock Creek Church Road and Spring Road. For this building I adapted plans that were used for the Bell School to the new site. The building for the Bell School was put under contract on May 19, 1922, for $119,345, or about 38 cents per cubic foot. The lowest bid received on the new school was $147,000, or an increase of $27,655, making the price per cubic foot 47 cents. As the bids were based on identical buildings it is manifest that the increase was due entirely to higher building costs. In view of the fact that the low bid for the proposed building at the intersection of Rock Creek Church Road and Spring Road exceeded the available appropriation of $130,000 by $17,000 it was not possible to let a contract without radically revising the plans. This was considered impracticable. The bids, therefore, were rejected, and the project postponed to await better market conditions. In this connection it is interesting to note the last report of the Bureau of Statistics, in which the statement is made that the average cost of building in June, 1920, was 41.6 per cent higher than in December, 1914, and June of this year it was 81.4 per cent higher than in 1914. If this condition persists, I fear we will not be able to let contracts for the buildings carried in the present bill within the moneys appropriated.

ADDITIONS TO OLD BUILDINGS.

I wish to call attention to the very unsatisfactory method of obtaining appropriations for additions to existing schools, for which we are frequently called upon to prepare plans. Most of the older

eight-room buildings are heated with hot-air systems, which generally comprise two furnaces in different parts of the building. Frequently an addition of four or eight rooms has been added to these buildings, which is usually heated by a separate furnace. When a third addition is required, generally eight rooms, we have the problem of heating the new unit, which, if an independent plant is installed, makes four separate heating plants, and places a great burden on the janitor or janitors having to maintain so many independent heating units. Generally the appropriation is specific in that it covers only the new addition to the building and rarely carries anything for the installation of a central heating plant for the whole group. The auditor has ruled against using any of the appropriation for the new building for remodeling or replacing the heating systems of the old buildings. Manifestly, the above situation is intolerable, as the four independent plants are uneconomical from the standpoint of first cost and also maintenance. Further, many of the old plants should be replaced, and this can best be done by combining the heating units into one plant when an important change is made in the building. The appropriations for this type of building should cover a specific amount for the new unit and a separate amount for the remodeling of the old buildings and the installation of a modern heating plant for the entire group.

SCHOOL GROUNDS.

In connection with the purchase of properties for new school buildings, I wish to call attention to the wholly inadequate sites generally provided. It is deplorable that most of our public schools do not have sufficient ground for play space, nor are the buildings provided with proper landscape settings. In fact, most of the schools have little more than the public parking, which, with the very limited playground space, makes it impossible to properly control the children and prevent them from playing in the parking spaces in front of the school. The result of this is generally a very disreputable looking approach to the school. If adequate playground space be furnished at the rear or sides of the schools, and it were possible to set the building well back from the building line, much more attractive approaches could be designed. I believe the opportunity for flowers, shrubbery, and other attractive planting would stimulate among both teachers and pupils an effort to maintain more beautiful surroundings than exist at the present time. I can not imagine anything more attractive in the midst of a thickly populated district than the public school placed on a spacious lot, set among flowers, shrubbery, and green grass. The average city block is about 300 feet long. A city square, therefore, would contain about 90,000 square feet. A 16-room school with an auditorium will occupy approximately 15,000 square feet, which would leave 75,000 square feet available for play space and approaches. If we set the building back about 30 feet from the building line for parking along the entire front, we would take up 9,000 square feet, which would leave 66,000 square feet for play space, or 33,000 square feet for each of two play spaces—one for boys and one for girls. I am of the opinion, therefore, that no graded school should have a site less than one city block. High schools should have proportionately larger sites, based on the requirements of each individual case.

GALLINGER HOSPITAL.

On December 15, 1921, the psychopathic group of the Gallinger Hospital was completed, and I was instructed to prepare plans and specifications for two ward buildings of the general hospital scheme. A general plan, as also the detail working drawings for the several buildings, were prepared for a site bounded by Upshur Street, Allison Street, Fourteenth Street, and Iowa Avenue. By the act of Congress, March 3, 1917, the site was changed to the tract of land occupied by the present city hospital near the Eastern Branch. The plans of the various buildings already prepared for the first site were adjusted to the new one. In the new arrangement the domestic building was placed in the center of the grounds, obstructing a fine view of the Anacostia River and the hills beyond. A small rendered drawing was made showing the entire hospital group as planned for the new site. This plan indicated clearly the unfortunate location of the domestic building from the standpoint of landscape design. The drawing also developed other probable undesirable features in the location of the administration buildings.

The group plan was finally submitted to the Fine Arts Commission for their suggestion and criticism, and the following recommendation was made:

At the meeting of the Commission of Fine Arts on May 4, 1923, Mr. A. L. Harris, municipal architect, and Capt. John E. Wood, assistant engineer commissioner, submitted drawings for the treatment of the Gallinger Hospital grounds, on Massachusetts Avenue SE., near the Anacostia Park, and stated advice was desired particularly with reference to the location of proposed new buildings.

The architect members of the commission (two of whom have had experience in hospital building) advise that before any further building is done the plans for the Gallinger Hospital be submitted to expert medical authorities on hospital construction for advice. The plans as submitted are not in accord with modern practice as to arrangement of the buildings. The commission suggests that the plans be submitted to Dr. S. S. Goldwater, director of the Mount Sinai Hospital, New York City, who is considered by architects the most eminent authority on hospital building construction and administration.

The commission will be pleased to give the plans further consideration after expert medical report has been made to you.

CHARLES MOORE, *Chairman.*

Immediately upon the return of Doctor Goldwater from Europe I took up the proposition of obtaining his services for a general criticism of the plans already prepared. After some correspondence, a proposition was made by Doctor Goldwater to make a complete survey of the plans and report his best judgment as to the proper arrangement, sequence, and relation of the various buildings, so as to bring about the most efficient administration of the various activities included in a modern hospital. At the present time no action has been taken on my recommendation submitting Doctor Goldwater's proposition to the commissioners. In the meantime, the plans and specifications for the ward buildings have been completed and are ready to be placed on the market as soon as the matter referred to above has been determined.

REFORMATORY AND WORKHOUSE.

Considerable progress has been made on the industrial railroad at Lorton, Va.; the grading is practically completed and nearly half a mile of track has been laid. The work on the buildings for the

reformatory at Lorton has been pushed rapidly during the summer so that now five shops, two washhouses, two disciplinary wards, and one dormitory building are completed, and the foundations of two additional wards started. Plans are being made for the domestic building, which is expected to be built during the winter and ready for occupancy early next spring. The report of the engineer in charge of this work will be found in another section of this report. Considerable progress has also been made in the development of a general scheme for the new workhouse. A number of studies have been made for different sites, which have been submitted at various times to the authorities for criticism and suggestions. It is believed that a satisfactory scheme has been found and that the sketches have been sufficiently studied to assume that a definite program can be laid down and actual working drawings commenced for the men's group. No studies have been made for the women's group to date, but it is expected to study this problem in connection with the men's group, in order that they may be properly coordinated architecturally.

Preliminary studies for the Home for the Feeble Minded on the site just purchased have been made and a general program mapped out. It is believed that it is possible to work out an excellent scheme and that the buildings will be well located on the high ground overlooking the Patuxent River, leaving the comparatively level ground free for farming purposes.

REPAIR SHOP WAGES.

Since the war the repair shop has experienced great difficulty in obtaining proper mechanics for the work of the repairs and upkeep of the schools. Congress appropriated for this purpose last year $300,000, most of which is spent in the repair and remodeling of existing buildings. Because of the impossibility of getting first-class mechanics, I regret to say much of this work is not only poorly done but unskilled mechanics do irreparable damage to the surrounding work, and frequently an incompetent mechanic will ruin more surrounding work than that replaced or repaired. This is poor economy and it seems to me that it would be wiser to employ only competent mechanics who work more efficiently and more intelligently.

Complaint has been made by the superintendent of the repair shop that the salaries fixed by the wage board are not sufficient to get proper mechanics and that he is doing the best he can under the circumstances.

Recently I submitted the following recommendation:

To Captain Wood.

Forwarding herewith petitions of the men employed at the repair shop requesting a hearing before Major Bell to present their view of the wages now paid the employees in that department. As there is considerable difference in the wages paid mechanics by outside contractors and the wages paid by the District, it seems to me that some action should be taken by the District to make this scale more nearly equitable, as I believe better work can be obtained if the men are satisfied. I am of the opinion that consideration should be given to some method of establishing a sliding scale by which adjustments

can be made from time to time as the wages vary on the outside. Owing to the fact that the men in the repair shop are employed the year around, whereas outside employment is more or less irregular, the employees of the repair shop should receive less.

———— ————,
Municipal Architect, District of Columbia.

I would therefore recommend that serious consideration be given to the adoption of a sliding scale as outlined above which will maintain a reasonable relation between wages paid the repair shop and those of outside mechanics.

OFFICE OF THE MUNICIPAL ARCHITECT.

Owing to the low salary scale of the municipal architect's office, great difficulty has been experienced in maintaining competent draftsmen for the work. During the past year the total number of draftsmen employed was 26. The total number at the present time is 13. The men representing the difference practically without exception have left because of better opportunities in private architects' offices or in Federal departments. It is difficult to build up an efficient organization where the personnel never remains the same for more than a month or six weeks at a time. This changing of employees hinders the execution of the plans and specifications. In this connection I would like to call your attention again to the recommendation in my report of 1922, in which I asked that instead of being allotted a predetermined proportion of the $100,000 allotment, that a sum equivalent to 3 per cent of the total cost of each project be set aside to pay for drafting, superintendence, supplies, and other miscellaneous items of expense in connection with the preparation of plans and specifications. This would give a specific sum for each individual project and each building would bear its proportionate cost. The present systems of allotting a certain sum of money, always less than the estimates submitted, is unbusinesslike and confusing. I would therefore suggest that the system outlined above be given consideration.

ALBERT L. HARRIS,
Municipal Architect, District of Columbia.

To the ASSISTANT ENGINEER COMMISSIONER.

REPORT OF THE SUPERINTENDENT OF REPAIRS.

WASHINGTON, D. C., *July 23, 1923.*

SIR:—I have the honor to forward herewith my annual report showing the operations of this shop during the fiscal year ended June 30, 1923.

There was appropriated by Congress:

Public schools, repairs to buildings, $250,000, all of which was expended except $221.90, which was reserved for any small bills that might come in after the close of the year.

Repairs to engine houses, $20,000, all of which was expended except $16.74.

Repairs to stations, $7,000, all expended except $4.30.

Repairs to police-court building, $2,000, all expended except $14.20.

The foregoing amounts represent the actual cost of 4,353 separate jobs.

In addition to the work covered by the above appropriations, which are under the supervision of the superintendent of repairs, this shop did $114,655.55 worth of work on various buildings belonging to the District of Columbia out of appropriations controlled by other departments.

We inspected and repaired steam boilers in 100 buildings owned by the District.

Modern lighting systems were installed in part or complete in 21 school buildings. It is our intention to equip as many buildings each year not already provided with an adequate lighting system as is possible without neglecting other more urgent repairs.

New heating plants were installed during the year in three buildings. This was all that could be done with funds available.

During the year there was turned over to us by the War Department a good deal of surplus war material which was placed in stock and will be used in general repair work wherever practicable.

During the year we have been very much hampered by our inability to secure competent mechanics in the various trades owing to the rate of compensation paid by outside contractors being so much greater than the wage schedule of the District. This is continuously getting to be a more serious matter in the shop.

We still have three foremen who are not furnished automobile transportation in the daily inspection of their work, but if Congress grants us the additional automobile asked this year the shop will be fully equipped. In this connection our foremen have been able to render at least 50 per cent better service since automobile transportation has been furnished them.

The estimated repairs for the fiscal year beginning July 1 are over $1,000,000. Congress appropriated $300,000 to do this work. The number of buildings is increasing each year, and the repairs upon the old buildings are also increasing; it is therefore impossible to do any but the most urgent repairs with the appropriation available.

Attention is invited to the urgent need of additional storage room at this shop for both material and for our automobiles. At the present time the automobiles are stored at night in the hallways, the tin shop, machine shop, and in the stable. We have asked Congress to give us an appropriation to take care of this item in the next District appropriation act. There has never been any garage at this shop.

The organization of the shop is the same as it was last year, composed of 5 annual employees, the superintendent, assistant superintendent, and 3 clerks, and from 115 to 225 per diem employees of the various trades. This number increases and decreases according to the season of the year and the amount of work in hand.

We have followed the practice of the last few years in compiling this report. Should more detailed information be desired we can furnish a detailed statement of the cost of every job, or we can furnish the expenditures under each class of work upon each and every building.

HENRY STOREY,
Superintendent of Repairs, District of Columbia.

To the MUNICIPAL ARCHITECT.

Public schools, District of Columbia, 1923, repairs to buildings.

Appropriation		$250,000.00
Stock on hand June 30, 1922		58,783.91
Total		308,783.91
Expended as follows:		
Carpentering	$70,771.05	
Tinning	22,219.94	
Heating	46,426.03	
Plumbing	12,877.89	
Painting	50,686.97	
Glazing	4,714.30	
Grading and cement work	13,796.31	
Gas and electrical work	15,841.67	
Miscellaneous (in this item is included the upkeep of 1617 U Street)	16,595.44	
Gas, electricity, ice, coal, telephones, and car tickets (pro rata share)	1,474.96	
Forage (pro rata share)	3,960.88	
Engineer stables (pro rata share)	859.56	
Sand wharf (pro rata share)	85.00	
Stock on hand June 30, 1923	48,252.01	
Unexpended balance	221.90	
		308,783.91

Fire Department, District of Columbia, 1923, repairs to engine houses.

Appropriation		$20,000.00
Expended as follows:		
Carpentering	$7,072.35	
Tinning	1,362.94	
Heating	2,437.31	
Plumbing	1,540.25	
Painting	5,662.78	
Glazing	132.83	
Grading and cement work	263.71	
Gas and electrical work	1,103.28	
Miscellaneous	11.64	
Pro rata charge for upkeep of stables, telephones, gas, coal, electricity, ice, forage, etc	396.17	
Balance	16.74	
		20,000.00

Metropolitan police, District of Columbia, 1923, repairs to stations.

Appropriation		$7,000.00
Expended as follows:		
Carpentering	$737.97	
Tinning	519.83	
Heating	957.80	
Plumbing	535.58	
Painting	2,558.43	
Glazing	138.13	
Grading and cement work	680.02	
Gas and electrical work	408.72	
Miscellaneous	135.87	
Pro rata charge for upkeep of stables, telephones, gas, coal, electricity, ice, forage, etc	160.99	
Stock on hand June 30, 1923	162.36	
Balance	4.30	
		7,000.00

REPORT OF CONSTRUCTING ENGINEER, DISTRICT OF COLUMBIA WORKHOUSE AND REFORMATORY.

LORTON, VA., *August 6, 1923.*

SIR: I have the honor to submit herewith report of the operations of the construction division of the workhouse and reformatory for the fiscal year ended June 30, 1923.

Work on projects as described in the report of last year has been continued in accordance with a schedule as previously described.

REFORMATORY BUILDINGS.

At the reformatory, besides the work on the industrial railroad, the permanent building program was continued.

The actual construction work done consisted of the main structure of five new buildings and the interior finishing of buildings constructed prior to the past year.

On June 30, 1923, there were 11 buildings completed or under construction, consisting of 5 shop buildings, 2 dormitories, 2 disciplinary dormitories, 1 wash house, and the remodeling of an old boiler house. Of these buildings four are complete except for connecting up the heating and lighting systems; three complete except for general interior work; the roofs being put on two and the brickwork in progress on the other two.

Approximately 200 feet of steam tunnel was constructed.

Shop building No. 19 has been put into service as an automobile garage in basement, broom factory, print shop, and store rooms on the main floor.

Shop building No. 20 has been used as a store room for construction materials and an office for the foreman.

Shop building No. 21 has been equipped with a motor driven, Universal woodworking machine, which will be used for making most of the mill work for the remaining buildings.

Work is being pushed as rapidly as material deliveries will permit on remodeling the old heating plant and installing steam pipes in the heating tunnels to provide heat for the completed buildings.

As the construction work progresses a greater interest is shown by the prisoners engaged on the various trades. A number of these men are becoming quite proficient as bricklayers, carpenters, cement finishers, etc. This fact is more clearly demonstrated by the low unit costs on this work.

These figures are based on the cost of bought materials and hired labor used directly on the work. No charge is made for overhead costs, prisoner labor, and bricks, as the cost of maintaining a prisoner is not affected by building operations, and the bricks used are manufactured on the reservation.

Cost of laying 1,000 bricks, including cement and lime	$13.59
Cost of placing one square of slate roofing, including trusses, purlins, etc	34.08
Average cost of buildings per cubic foot	0.109

These unit costs could be further reduced and the quality of the work improved by the establishment of good trade schools where the inmates could be thoroughly instructed in the various building

trades before being placed on the actual construction of permanent buildings.

In addition to the work on the reformatory group of permanent buildings a 10-room employees' quarters was constructed and a 5-room brick bungalow.

INDUSTRIAL RAILROAD.

During the past year the following described work was done on the industrial railroad between the workhouse and reformatory:

A brick tunnel under the county road near the superintendent's residence was constructed. The roadbed between this point and the main highway was graded by the reformatory and a section about 1,500 feet long extending north from the workhouse was graded by the workhouse men. Considerable work was also done in trimming down the banks in cuts and widening the fills over the reformatory sections of this road preparatory to laying track.

On the reformatory section of this road 2,300 feet of track was laid and on the workhouse section about 300 feet was laid. As the ties and other materials for this construction were stored at both institutions and as separate gangs of men from each institution were employed on this work it was found advantageous to start the track work at the ends of this new section, with the object of connecting and completing the road at the site of a bridge over the main highway.

Work was started in June on grading the highway and excavating for the abutments of this bridge. With a sufficiently large force of men kept constantly on this work and other conditions favorable the section of the industrial railroad between the reformatory and workhouse should be ready to put in operation during the coming winter. Another locomotive and some additional cars are badly needed for this road. The completion of this section of the railroad will greatly facilitate the building operations at the reformatory, as all building materials can then be transported direct by rail to the building site, and in view of the proposed increase in the inmate population building operations can be pushed more rapidly provided sufficient funds are available to carry on this work.

To make a fair showing on reformatory permanent construction annual appropriations of at least $60,000 should be made for this work.

WORKHOUSE.

Considerable repair work was required on the old temporary buildings to keep them in habitable condition. This expense should be greatly reduced when new buildings are constructed and put in use.

Preliminary plans for the group of permanent workhouse buildings have been prepared and building operations will be started as soon as possible after these plans are completed and approved. When construction is started annual appropriations of at least $50,000 should be made for this work.

CENTRAL POWER PLANT.

During the month of August, 1922, the central power plant on Occoquan Creek was put in operation. This plant furnishes electricity for lighting and power for both institutions. Further developments of this power plant include the construction of a new high-tension transmission line from this plant to the workhouse and reformatory and the furnishing of heat and power for the manufacturing industries in the vicinity of this plant, including the brick plant.

BRICK PLANT.

With the beginning of permanent construction at the workhouse and the increasing demand for bricks for school buildings in Washington, a greater production of bricks will be required at the brick plant. Preliminary plans with estimates for the installation of duplicate machines have been prepared. This plant should be kept in first-class condition and operated to its fullest capacity, as the demands for bricks will increase steadily and the abundant supply of excellent shale and clay from which these bricks are made is available in very few brick plants about Washington.

PUMPING STATION.

Since January, 1923, a new electric driven centrifugal pump has been operating successfully in the pumping station. The installation of this new pump has made possible the discontinuing of firing the steam boiler in the old stone crusher house (formerly used to supply steam for the old steam pumps) and has effected a great saving of coal. Preliminary plans have been prepared for constructing a new pumping station in connection with the central power plant with settling basins, filter beds, etc. It is also very essential to have a storage tank or reservoir in the vicinity of the new reformatory to provide a reserve water supply for that institution in case the water supply main should break.

It is also planned to equip a building near the central power plant as a machine shop. A number of machines have been obtained from the Army surplus supplies for this place. This department has also obtained a large quantity of other surplus Army supplies and tools for both institutions.

The following tables give the cost of the various construction and repair jobs at both institutions. The cost of each permanent building at the reformatory is reported separately and its previous cost proportioned from the lump sum cost of permanent buildings from report of last year. The cost of each job is taken from the actual cost of hired labor and bought materials actually used on that particular job and do not include overhead expenses, transportation, etc. The total expenditures from the appropriations may be obtained from the reports of the chief clerk at the workhouse and at the reformatory.

Work at the District of Columbia workhouse.

Title.	Number days prison labor.	Number bricks.	Cubic yards sand and gravel.	Paid labor.	Bought material.	Cost previously reported.	Total chargeable to the appropriation.
Central power plant	148			$230.64	$265.35	$411 65	$877.64
Locomotive house						1,337.95	1,337.95
Repairs at brickyard	127	8,350	53	88.96	1,335 34	4,995,53	6,420.13
Superintendent's residence	335			717 85	921.59	1,686 30	3,325 74
Ninth Street Wharf	16			65 51	80 22	1,116 65	1,262 38
Work at shipyard	587			492 50	125 69	5,456 20	6,074 39
Railroad trestle, etc						4,247.25	4,247.25
Railroad tunnel	131			44 02	21 22		65.24
Railroad (general work)	1,910			221.33	37.09		258.42
Assistant superintendent's residence	194			354 62	229 46	911 32	1,495.40
Female department	494	4,675		687 59	674.09	1,512.39	2,874.00
Road work	395			35.00			35.00
Dry dock	17			47.12			47.12
Total							28,320.73

CONSTRUCTION AND REPAIR FOR ADMINISTRATION AND UPKEEP.

Temporary buildings, residences, etc	5,488	8,080	5	9,696.04	7,313.82	33,021.78	50,031.64
Construction engineer truck						20.84	20.84
Total							50,052.48

Total chargeable to the appropriation this year, $78,373.21.

Work at the District of Columbia Reformatory.

PERMANENT CONSTRUCTION.

Title.	Number days prison labor.	Number bricks.	Cubic yards sand and gravel.	Paid labor.	Bought material.	Cost previously reported.	Total chargeable to the appropriation.
Dormitory building No. 14	306	12,000	9	$231.94	$108.32	$77.64	$477.90
Dormitory building No. 15	1,070	37,400	30	1,865.39	2,727.75	1,815.42	6,408.56
Wash house, building No. 16	679	72,615	63	918.05	423.02		1,341.07
Discipline dormitory building No. 17	1,209			2,223.83	6,870.25	8,489.02	17,583.10
Discipline dormitory building No. 18	91			435.23	26.84	8,011.93	8,474.00
Shop building No. 19	488			444.79	1,104.92	8,203.09	9,752.71
Shop building No. 20	679			465.77	1,186.39	6,726.36	8,378.52
Shop building No. 21	1,539	82,992	72	940 91	3,258.41	43.50	4,242.82
Shop building No. 22	1,473	105,000	83	830.71	3,016.00	110.00	3,956.71
Shop building No. 23	1,665	105,000	83	593.11	1,462.09	110.00	2,165.20
Remodeling boiler house	550	10,000	8	289.01	651.08		940.09
Miscellaneous, including sewers, etc	2,142	64,326	6	3,047.06	1,884.09	5,533.76	10,464.91
Workmen's quarters	655			691.46	302.35		993.81
Brick bungalow	1,413	43,000	4	1,452.09	1,763.90		3,215.99
Railroad	3,582	35,000	3	2,412.61	390.31	22,660.40	25,463.32
Locomotive house						697.55	697.55
Railroad tunnel	888	140,000	11	731.50	661.33		1,392.83
Overhead bridge	105			60.50			60.50
Construction engineer truck					69.53	1,072.01	1,141.54
Total chargeable to permanent construction							107,157.13

Work at the District of Columbia Reformatory—Continued.

CONSTRUCTION AND REPAIR FOR ADMINISTRATION AND UPKEEP.

Title.	Number days prison labor.	Number bricks.	Cubic yards sand and gravel.	Paid labor.	Bought material.	Cost previously reported.	Total chargeable to the appropriation.
Temporary buildings residences, etc	1,746			$1,118.23	$125.87	$35,104.49	$36,348.59
Central power plant				183.32	70.48	64,753.20	65,007.00

HERBERT R. HAAR,
Constructing Engineer.

The MUNICIPAL ARCHITECT.

REPORT OF THE SUPERINTENDENT OF THE WATER DEPARTMENT.

WASHINGTON, D. C., *August 16, 1923.*

SIR: The annual report of the water department for the fiscal year ended June 30, 1923, is submitted herewith.

The total length of water mains laid during the fiscal year is 83,849 feet, or 15.9 miles, which is an increase of 4.1 miles over the amount laid last year. Total length of water mains of various sizes in service is 674 miles.

The mean daily water consumption for the fiscal year is 63,982,461 gallons, giving a mean daily per capita consumption of 142 gallons, estimated on a population of 450,000.

The principal work involving water main construction consisted of the laying of 4¼ miles of 20-inch cast-iron water pipe from Chevy Chase Circle to Georgia Avenue and Military Road. This work completes a line long needed in the third high service system forming a second through line of water main from the pumping station to the Reno Reservoir. Newly opened subdivisions east of Chevy Chase and in the vicinity of Walter Reed Hospital, as well as Takoma Park, will be benefited primarily by this extension.

Other mains of smaller size but of considerable importance are listed herewith:

Especially important work done during the year includes (1) replacement at the District pumping station of our 2,500,000 gallon Holly pumping engine for the third high service with a 10,000,000 gallon centrifugal pumping unit; (2) necessary repairs made to our present Nos. 5 and 6 boilers, which will probably add almost six years to the life of same; (3) replacement of the original slightly worn gear, pinion, and bearings on No. 3 engine with new ones, enabling us to carry the originals as spares; (4) installation at Reno pumping station of mufflers and self-starters, in addition to overhauling the engines; (5) necessary repairs made to the air pump on No. 7 engine; and (6) necessary repairs to the broken lightning rod on the brick chimney at the District pumping station.

Construction work now in progress by the United States Government will provide light, heat, and power to one Government departmental building, and when completed a saving of approximately 1,500,000 gallons of filtered water per day now being consumed for

condensing purposes will be effected. This improvement will be placed in service before the end of the present year.

The project for the extension of the first high service of Anacostia had not been started at the end of the fiscal year, but will be begun prior to the completion of the Smothers School, for the adequate service of which this extension was found desirable, and, further, other points having considerable elevation will be benefited.

During the year an estimate and general outline of the proposed high pressure fire service were completed.

The water department also made an exhaustive study of the trunk lines necessary to give to outlying territories which are rapidly outgrowing their present supply lines an adequate water supply, the most important of these projects being submitted with requests for appropriations for the next fiscal year.

The department wishes to call attention to the fact that water main extensions must be denied to isolated sections sparsely built up on account of lack of funds to provide for these cases. It is now the practice to allow the owners the privilege of laying small services at their own expense. This is not considered good practice, because no fire protection is possible.

Detailed reports of the several subdivisions of the department are on file in the superintendent's office.

J. S. GARLAND,
Superintendent Water Department, District of Columbia.

ASSISTANT TO THE ENGINEER COMMISSIONER.

ENGINEERING AND CONSTRUCTION.

The 30-inch main was extended in Adams Street from Flagler Street to First Street NW.; from its end a 12-inch main was laid in First Street north to Bryant Street to reinforce the second high service in this vicinity.

A 20-inch main was laid from Chevy Chase Circle, through Rock Creek Park, to Georgia Avenue, and south on Georgia Avenue from Fern Street to Military Road NW. This main acts as a trunk main for the third high service and gives an adequate supply of water for fire protection, as well as a supplemental supply for domestic purposes, in the territory through which it passes, as connections were made at intervals with service mains. This completes a loop, long needed, from the Bryant Street pumping station to Reno Reservoir and return. This work was started in November and finished the latter part of June. Total length about 4¼ miles.

Twelve-inch water mains were laid as follows:

Thirty-first Street, between Tennyson and Stephenson Streets NW.
Kalmia Street, between Alaska Avenue and Georgia Avenue NW.
Ingraham Street, between Thirteenth and Fourteenth Streets NW.
Albemarle Street, between Forty-ninth Street and Massachusetts Avenue NW.
Columbia Road, westward from Harvard Street NW.
Belmont Road, between Massachusetts Avenue and Tracy Place NW.
Grant Street, east from Minnesota Avenue NE.
Grant Street, between Division Avenue and Fifty-third Street NE.
Keokuk Street, east from Thirty-seventh Street NW.

The most important 12-inch main laid was the one in Ingraham Street, between Thirteenth and Fourteenth Streets NW. This main

will give a supplemental supply to the third high-service area west of Fourteenth Street.

The 12-inch main laid in Grant Street, east of Minnesota Avenue NE., gives to a number of old houses the necessary supply for domestic use, as well as proper fire protection.

Repaired the 36-inch United States Government main in First Street SE. three times during the year.

A 10-inch water main was laid for the United States Government across the New Key Bridge. The necessary material for this work was furnished by the Federal Government.

Preliminary work was started for the purpose of offsetting the 36-inch main on Canal Road, at College Pond, due to a break in main at this point.

The old double line of 30-inch arched pipe over College Pond, adjacent to the Canal Road, was removed, necessitating the reconnection of these mains below the surface of the ground.

Reservoirs were cleaned and grounds kept in condition throughout the year.

INSTALLATION AND MAINTENANCE OF WATER METERS.

One thousand four hundred and sixty District of Columbia meters were installed inside of buildings, and 1,319 meters were installed outside, or a total of 2,779 new meters for the year.

On June 30, 67,567 services were metered, leaving 10,112 unmetered services, 86.9 per cent of the services being metered.

Five thousand and two District of Columbia owned meters were removed and replaced for the following reasons:

Not registering	3,314
Lack of pressure	153
Leaking	981
For test	19
On account of noise	20
Defective registers	426
For building purposes	53
Abandoned to new services	36
District of Columbia owned meters—miscellaneous:	
Repaired in place	217
Abandoned and removed	57
Adjusted to grade	130
Private meters:	
Not registering, removed	231
Reset after repairs	383
Repaired in place	54
Leaking, repaired	98
Lack of pressure	18
Removed for test	10
Defective registers	10
Set District of Columbia owned meters temporarily in place of private meters	155
District of Columbia owned meters removed and private meters reset	122
Miscellaneous:	
Replaced covers on curb boxes	219
Replaced meter box frames and covers	142
Curb boxes adjusted to grade	55
Replaced curb boxes	100
Taps made	2,816
Taps removed and main plugged	37
Service pipes inspected	2,823

STEAM ENGINEERING.

The following is a summary of the work done at the District pumping station for the year:

Water pumped, figured from plunger displacement:		
First high service	gallons	7,184,763,320
Second high service	do	3,453,116,300
Third high service	do	1,449,619,160
Total	do	12,087,498,780
Fourth high service	do	93,291,650
Coal burned	tons	7,632
Cylinder oil used	gallons	601
Engine oil used	do	1,296
Filtered oil used	do	915
Turbine oil used	do	1,170
Grease used	pounds	484
Waste used	do	701

The regular force employed at this station in the daily operation of the pumping engines, boilers and auxiliaries, cleaning of machinery, etc., consisted of three crews of three engineers in charge, three assistant engineers, three firemen, three oilers, and three cleaners, working in eight-hour alternate shifts, "six days on and one day off" per week, being relieved on "days off" by an extra engineer crew.

For the fourth high service the water is pumped from the Reno Reservoir, which is supplied by the third high-service pumps, to an elevated tank by gasoline engines and triplex pumps. This machinery is operated daily by three enginemen who work on eight-hour shifts. The water pumped for this service during the year was 93,291,650 gallons, or a mean of 255,594 gallons daily.

The Anacostia pumping station has been operated without interruption during the year, pumping to the three towers supplying the area east of the Anacostia River. This station is taken care of by four enginemen who work on eight-hour shifts. The water pumped for this service during the year was 154,292,300 gallons, or a mean of 405,227 gallons daily.

The total pumpage for the year at the District pumping station was 347,414,610 gallons more than in 1921–22. The greatest amount pumped in one day (June 26) was 40,320,730 gallons, least in one day (August 13) was 29,289,760, and the average dynamic head against pumps was 129.16 feet. The total operating expenses (excluding overhead chargeable to pumping) was $115,748.16, as against $102.637.92 in 1921–22, making the total operative cost (excluding overhead) of pumping 1,000,000 gallons of water into the mains $9.58. This is $0.84 per million gallons more than in 1921–22, and is mainly due to an increase in the cost of the coal used. The average cost of coal per ton for the year was $8.59, which was $1.65 more than in 1921–22.

The station duty for the year was 78,695,799 foot-pounds per 100 pounds of coal. This is 4 per cent more than the duty obtained during the preceding year, and represents an annual saving of approximately 307 gross tons of coal. This saving in coal may be attributed almost entirely to the improved economic pumping operations.

WATER SURVEYS.

UNDERGROUND LEAKAGE INVESTIGATION.

The item of accomplishment of principal importance in this work was the detection and stoppage of the waste of 755,000 gallons daily, over three-quarters of a million gallons, or, in other words, over 1 per cent of the total daily supply to the entire city. This item is considerably less than the comparative figure of last year, due entirely to the fact that the normal force operating upon this work has been utilized for a very great portion of its time assisting on "complaint investigation" which required immediate attention and upon the elimination of abandoned services, which were over 300 cases in arrears when turned over to this division in the early part of the year. A total of 169 individual leaks was found, averaging 4,468 gallons daily each. The chief source of leakage was the lead-calked joints, both numerically and considering the quantity discharged per joint. A total of 33 leaking joints, averaging 6,815 gallons per day each and totaling 224,910 gallons daily, was found during the year. Second in importance were 25 corroded iron service pipes, averaging 6,125 gallons per day and totaling 155,120 gallons daily waste.

COMPLAINT INVESTIGATION.

The work under this head embraced strictly routine disposal of complaints received directly by letter and telephone or through the police department, health department, and other channels concerning defects and nuisances pertaining to the water system. Much of the work of this division also arises from complaints of water in cellars and other nuisances due to obstructed sewers. A complete and positive determination is made in each of these cases before these matters can be referred to the proper offices. This involves much work and consequent expense, from which no direct return is secured. In effect, this division is the clearing house for many nuisances not arising from the distribution of water.

The complete accomplishment of the water-survey division under all classifications is presented in tabulated statements on file in the superintendent's office.

STOREKEEPING.

The cost of operating the storeroom for the year was 2.64 per cent of the value of material issued and equipment disposed of, as compared with last year, i. e., 3.45 per cent.

The value of material issued and equipment disposed of during the year was $557,288.53, and the total wages, salaries, and per diem paid to employees of the storeroom during the year was $14,689.39.

A complete inventory of all material and equipment owned by the department was prepared and forwarded to the auditor, District of Columbia. This inventory also showed all receipt and expenditures of material and equipment from October 1, 1921, to September 30, 1922.

Collected, stored, weighed, counted, and delivered to the contractors old material to the value of $1,836.12.

All equipment which was worn out during the year was collected, inspected, and condemned by the survey officer, and disposed of as ordered by the auditor.

The values of material and equipment received and issued during the year were as follows: Material received, $459,178.79; issued, $468,279.22; equipment received, $21,430.07; issued, $89,009.31.

The value of material on hand at the close of the year was $175,748.37, and the value of equipment in stock and in service at the close of the year was $646,263.20.

TRANSPORTATION.

The present transportation equipment consists of 45 automobile trucks, ranging in capacity from a light Ford roadster to a 5½ ton Mack truck. During the year we have increased this equipment by 10 trucks.

Hauled for use by the construction forces and for storage in the property yards 27,180,000 pounds of material; about 13,590 tons.

Hauled from construction jobs to various dumps, 1,487 loads of dirt; about 5,200 cubic yards.

Hauled from the pumping station to various jobs and dumps 313 loads of ashes; about 1,565 cubic yards.

The charges for use of our heavy trucks on general hauling, per 8-hour day, are as follows:

5-ton truck with driver	$16
3½-ton truck with driver	14
2½-ton truck with driver	12
2-ton truck with driver	12
1-ton truck with driver	9

While these rates are only about one-half the rates charged by contractors the total charges for use of our heavy trucks during the year exceeds the cost of maintenance and operation of those trucks by $2,157.88.

The cost of maintenance and operation of these trucks includes gasoline, oils, grease, tires, miscellaneous supplies, material, and labor expended in making repairs, garage rent, driver's wages, and a charge for depreciation.

TABLE I.—*Cost of work done by the water department for the year ended June 30, 1923.*

Heads of expenditure.	Per diem and salaries.	Material expended, cuts and transportation.	Total expenditures.	Charge to general account.		Hauling and deposit accounts, Dr.
				Maintenance.	Extensions.	
Water surveys (detection of leaks)	$22,860.36	$2,847.00	$25,707.36	$25,707.36		
Maintenance of meters	29,209.84	7,614.24	36,824.08	36,824.08		
Installation of meters	12,027.52	37,026.99	49,054.51		$49,054.51	
Office of water registrar	64,151.51	7,648.82	71,800.33	71,800.33		
Inspection and repair of services	16,413.66	3,368.85	19,782.51	19,782.51		
Tapping water mains	6,396.33	7,016.19	13,412.52		13,412.52	
New service installed	91.54	91.41	182.95		182.95	
Engineering (field surveys)	22,774.44	2,305.13	25,079.57		25,079.57	
Hauling account	16,509.85	7,540.78	24,050.63			$24,050.63
Operation and repair of valves, fire hydrants, etc	24,344.89	3,718.90	28,063.79	28,063.79		

TABLE I.—*Cost of work done by the water department for the year ended June 30, 1923*—Continued.

Heads of expenditure.	Per diem and salaries.	Material expended, cuts and transportation.	Total expenditures.	Charge to general account.		Hauling and deposit accounts, Dr.
				Maintenance.	Extensions.	
Installation of fire and public hydrants	$3,063.13	$13,684.53	$816,777.66	.....	$16,777.66	.....
Water mains laid	112,217.02	211,914.59	324,131.61	.....	324,131.61	.....
Repairs to leaks	22,326.92	9,067.05	31,393.97	$31,393.97	.....	.....
Maintenance of reservoirs, lodges, and towers	3,513.67	725.93	4,239.60	4,239.60	.....	.....
Care of grounds	8,458.69	271.19	8,729.88	8,729.88	.....	.....
Repayment and deposit work	12,886.26	14,895.16	27,781.42	.....	.....	$27,781.42
Replacement work, lowering mains, etc	10,498.27	13,008.47	23,506.74	23,506.74	.....	.....
Plans, estimates, and tests	15,630.93	324.37	15,955.30	10,636.87	5,318.43	.....
Care of Bryant Street pumping station	24,097.47	8,309.30	32,406.77	32,406.77	.....	.....
Operation and repair pumps, Bryant Street station	48,865.71	67,749.05	116,614.76	116,614.76	.....	.....
Operation and repair pumps, Reno station	5,829.99	1,611.64	7,441.63	7,441.63	.....	.....
Operation and repair pumps, Anacostia station	7,765.15	2,925.96	10,691.11	10,691.11	.....	.....
Shopwork	17,721.72	17,192.53	34,914.25	34,914.25	.....	.....
Furnished other District of Columbia offices	3,707.61	136.38	3,843.99	3,843.99	.....	.....
Gross expenditures	511,392.48	440,994.46	952,386.94	466,597.64	433,957.25	51,832.05

SUMMARY.

Expenditures:		Charge to:		Per cent.
Per diem pay rolls	$416,899.02			
Salary pay rolls	94,493.46			
Total services	511,392.48			
Material expended, cuts, etc	440,994.46			
Gross expenditures	952,386.94			
Less transportation and repayment credits	51,832.05			
		Maintenance	$466,597.64	52
		Extensions	433,957.25	48
Net expenditures	900,554.89		900,554.89	100

TABLE II.—*Statement of the distribution system, including mains laid by the United States, the District of Columbia, and on account of repayment work.*

Diameter.	In service June 30, 1922.	Laid during year ended June 30, 1923.	Abandoned during year ended June 30, 1923.	In service June 30, 1923.
3-inch.....linear feet	85,771	1,250	.....	87,021
4-inch.....do	155,164	643	.....	155,807
6-inch.....do	1,467,961	1,284	.....	1,469,245
8-inch.....do	985,877	51,246	446	1,036,677
10-inch.....do	9,107	.....	.....	9,107
12-inch.....do	425,012	5,405	.....	430,417
16-inch.....do	29,584	1,629	.....	31,213
20-inch.....do	119,738	21,773	.....	141,511
24-inch.....do	36,133	.....	.....	36,133
30-inch.....do	58,000	595	.....	58,595
36-inch.....do	59,433	24	.....	59,457
42-inch.....do	23	.....	.....	23
48-inch.....do	44,172	.....	.....	44,172
75-inch.....do	600	.....	.....	600
Total	3,476,575	83,849	446	3,559,978
Stop valves	11,352	307	86	11,573
Fire hydrants	3,814	160	56	3,918
Public hydrants	253	24	3	274
Sanitary fountains	21	2	.....	23
Horse fountains	153	3	1	155
Public wells	44	.....	.....	44

TABLE III.—*Statement of the length and cost of water mains laid from July 1, 1878, to June 30, 1923, paid from water department funds.*

Diameter.	In service June 30, 1922.	Laid during year ended June 30, 1923.	Abandoned during year ended June 30, 1923.	In service June 30, 1923.
3-inch.....linear feet..	77,159	12	.....	77,171
4-inch.....do....	116,370	51	.....	116,421
6-inch.....do....	1,078,981	392	.....	1,079,373
8-inch.....do....	926,310	50,669	446	976,533
10-inch.....do....	6,739	.....	.....	6,739
12-inch.....do....	368,996	5,147	.....	374,143
16-inch.....do....	22,436	1,626	.....	24,062
20-inch.....do....	108,636	21,773	.....	130,409
24-inch.....do....	15,653	.....	.....	15,653
30-inch.....do....	20,437	591	.....	21,028
36-inch.....do....	38,244	.....	.....	38,244
42-inch.....do....	23	.....	.....	23
48-inch.....do....	14,309	.....	.....	14,309
Total.....	2,794,293	80,261	446	2,874,108

Total cost to June 30, 1922.....	$4,477,732.02
Total cost for year ended June 30, 1923.....	324,131.61
Aggregate cost to June 30, 1923.....	4,801,863.63

REPORT OF THE WATER REGISTRAR.

WASHINGTON, *August 15, 1923.*

SIR: I submit herewith the annual report of the revenue and inspection branch of the water department, showing in detail the work accomplished during the year ended June 30, 1923.

WATER RATES.

The rate for domestic purposes is charged according to stories and front feet. On all tenements two stories high with a frontage of 16 feet or less, $6.25 per annum; for each additional front foot or fraction thereof greater than one-half, 39 cents; for each additional story or part thereof, one-third of the charges as computed above.

Business premises are rated according to their size, class, volume of business, and water facilities, and rate from $1 to $25. If the flat rate on business establishments reaches $25 or more, the owner or occupant is required to install a water meter at his own expense.

A minimum rate of $5.65 will be charged against all consumers supplied with water through meters, which allows the use of 7,500 cubic feet of water during the year; water used in excess thereof will be charged for at the rate of 5 cents per 100 cubic feet.

TABLES.

The table of comparative revenues shows a total collection of $1,104,636.79.

Table 1 shows statement of cash receipts of the water fund.

Table 2 shows comparative statement of revenues.

Table 3 shows general information.

GEO. W. WALLACE,
Water Registrar.

The SUPERINTENDENT, *Water Department.*

TABLE 1.—*Statement of collections.*

Water rents:	
Flat rate	$103,160.54
Meters	865,452.68
Building purposes	6,692.07
Total	975,305.29
Water-main tax, principal and interest	128,372.29
Miscellaneous receipts	959.21
Total	129,331.50
Total receipts	1,104,636.79
Taps and stop cocks	15,461.84

TABLE 2.—*Statement of cash receipts of the water fund, District of Columbia, for the fiscal years from June 30, 1912, to June 30, 1923.*

Year.	Water rents.	Water-main tax, principal and interest on same.	Miscellaneous receipts.	Year.	Water rents.	Water-main tax, principal and interest on same.	Miscellaneous receipts.
1912	$545,405.47	$122,458.81	$2,817.50	1920	$771,161.55	$43,121.19	$1,164.01
1913	640,908.64	138,693.57	3,153.81	1921	984,055.23	78,989.83	1,557.73
1914	646,296.15	86,379.21	4,253.20	1922	943,182.45	86,425.56	2,455.49
1915	638,861.89	66,107.56	3,532.77	1923	975,305.29	128,372.29	959.21
1916	624,882.18	64,647.80	1,761.39				
1917	635,664.31	61,990.43	2,019.58	Total	8,902,370.80	940,015.14	25,616.23
1918	714,388.28	31,649.46	458.96	1924[1]	956,000.00	85,000.00	1,000.00
1919	782,159.36	28,179.43	1,482.58	1925[1]	950,000.00	85,000.00	1,000.00

[1] Estimated.

TABLE 3.—*General information.*

	Cubic feet.
Consumption of water through meters:	
District meters	643,602,300
District meters in municipal buildings	82,698,100
Private meters	845,753,900
Private meters in charitable institutions	26,979,200
Total	1,599,032,900

Meters in service.	In use June 30, 1922.	Installed 1923.	Abandoned 1923.	Total in use June 30, 1923.
District meters	61,228	2,837	312	63,753
District meters in municipal buildings	264	.....	.....	264
Private meters	2,864	475	15	3,354
Private meters in charitable institutions	189	7	.....	196
Total	64,545	3,319	327	67,567

Average cost of reading meters	$0.20
Average cost of computing and making bills	$0.23
Average payment for premises in which meters were installed	$7.13
Average payment for flat-rate accounts	$10.20
Premises receiving an allowance of free water:	
Number of institutions	166
Number of meters	196
Cubic feet of water consumed	26,979,200
Allowance of free water	31,644,965
Number of institutions exceeding allowance	38

Water services:	
In use June 30, 1922	75,011
Installed 1923	2,982
Total	77,993
Abandoned 1923	314
In use in June 30, 1923	77,679
Metered	67,567
Not metered	10,112
Percentage of services metered	86.98

REPORT OF THE SANITARY ENGINEER.

WASHINGTON, D. C., *August 31, 1923.*

SIR: The annual report of the sanitary engineer, covering the fiscal year ended June 30, 1923, is submitted herewith.

In presenting this report attention is again called to the fact that the extension of the District sewer system has not kept abreast of the growth of the city, and at this date there is urgent need for the expenditure on suburban trunk sewers alone of practically $3,000,000.

In addition a more vigorous prosecution of continuing work on the interceptors is urged. In the last 30 years there has been expended over $6,000,000 on the sewage-disposal system, to intercept and remove all sewage which originally discharged into the watercourses flowing through the District. To complete this system of interceptors, devised to eliminate the pollution of these streams, will require the expenditure of slightly more than $1,000,000, and at the rate at which appropriations have been made available for the past 10 years it will be 18 years before this work is finished.

A situation which should be carefully noted is that, through lack of funds, this division has been unable during the past year to provide sewers for many new buildings in progress or contemplated. The fiscal year 1923 ended with more sewers of this class ordered constructed than can be built with the funds available for the entire ensuing year. The above ordered sewers do not represent the total requested, for in many cases, requiring more than a nominal length, the sewer was not recommended. In many cases the applicant, at a distinct financial loss to himself, paid entirely for the public sewer. Over $25,000 worth of construction was thus paid for by private interests. The above condition is most regretable in view of the fact that the law providing that the benefited party must pay a special assessment for sewer service implies that he will be provided with such. During the past three years, the period of the revised assessment, there has been returned on account of sewer assessment $146,845, or 36 per cent of the total amount of the appropriations.

As a further result of insufficient appropriations, there are now in this, the Capital of the Nation, almost 3,000 privies, and what is more deplorable, the number of privies instead of growing less has been increased during the past year by 100.

The following is a summary of the sewerage and sewage-disposal systems, as of June 30, 1923:

Length of sewerage system (miles):		
Main sewers	153.82	
Pipe sewers	622.16	
		775.98
Length of sewage-disposal system (miles)		36.69
Total length (miles)		812.67
Cost of sewerage system		$15,802,236.46
Cost of sewage-disposal system		5,975,232.96
Total cost		21,777,469.42

The sanitary engineer acknowledges the efficient and loyal service rendered by heads of sections and other employees of this division.

A brief outline of the year's activities is recorded herewith, as follows:

SECTION OF OFFICE ENGINEERING.

[A. D. Black, principal assistant engineer, in charge.]

The work of this section comprises the computing, designing, and drafting work incidental to studies for new construction, repairs, or improvements, and for future extensions of the system. This section also has charge of the map work of the division, the file system of drawings, and is charged with the duty of furnishing the public information concerning the sewerage system, particularly as to the availability, function, location, and size of existing sewers as required in connection with building activities. In addition, this section answers or indorses all letters and jacketed files requesting sewer construction.

During the year 2,146 plumbing slips were issued as to availability or nonavailability of sewers. Eight hundred and sixty jacketed files were handled, each requiring an indorsement or the preparation of a letter. Five hundred and eleven of the above files were requests for construction, each case requiring detail work as to sewer sizes and locations, estimated cost, and the preparation of an accompanying plat or blue print showing all pertinent facts. To conserve the very limited appropriation for service sewers, and with a view of serving the greatest number of houses per unit length of sewer constructed, it has been the policy of this office to favorably recommend for construction only those sewers which did not require an excessive length per house. As a result of this policy service was provided during the year for 865 houses, requiring an average length of sewer construction of 59 linear feet, at a cost of $232 per house. Four hundred fifty-three plats were forwarded to the assessor covering cases where new subdivisions were made abutting existing service sewers, where houses on parcel property were connected to a service sewer, where trunk sewers were construed as service sewers, and as advance notice of pending sewer assessment. In connection with the paving of streets and sidewalks, 348 studies were made as to sewer requirements in order to avoid the cutting of new surface work. In that the establishment of new or the modification of existing street and alley grades affects the existing and future sewer construction, it has been necessary during the year to study 166 cases of proposed

surface grades. Incidental to the extension of the sewer system, 31 rights-of-way deeds with accompanying plats were prepared, 26 of which were acquired. The commissioners authorized the corporation counsel to acquire, under a compromise settlement of $28,747.52, a tract of 36.9 acres at the location of the proposed sewage-treatment works, and its early acquisition is anticipated. Three parcels of land, with a combined acreage of 32.6 acres, have already been taken over for this purpose, and there is yet to be acquired a total of about 15 acres. During the year 36 contracts were prepared, all of which required specifications, plans, and estimated quantities. Many of these contracts required supplementary detailed drawings of junction chambers and other details. Throughout the year progress has been made on the future layout of the sewer system, necessitating studies of drainage areas, run-off, and corresponding sewer sizes. Maps have been kept posted to date by the plotting thereon of 307 separate pieces of new sewer construction, 839 cases of new subdividing, splits, alley and street openings or closings, new and revised street grades, location of 2,498 new houses constructed in county, etc. Twenty maps which had become badly worn were remade. In conjunction with the above, card indexes reflecting the various work done by this section were kept posted to date. In addition, 163 miscellaneous plats were required, making in all 1,194 drawings.

The work handled by this section is by far the most exacting of that required by any section, and the large part of the activities of this division are dependent upon the conduct of this office. With the low salaries available it has proven impossible to retain the services of technically trained men required for the proper handling of this work. Great credit is due the personnel of this force for the work that was actually performed. The turnover during the year reached the discouraging figure of 133 per cent.

The outstanding need for the betterment of this section is the creation of a subsection of computing to permit of an intelligent study of the very important question of drainage and sewer sizes, but, as stated last year, great difficulty has been experienced in obtaining the services of properly qualified men with the necessary education and knowledge of mathematics and hydraulics required to undertake this work.

SECTION OF SURVEY AND CONSTRUCTION ENGINEERING.

[C. C. Baden, assistant engineer, in charge.]

The work of this section covers the supervision of all contract work, preliminary surveys for and the staking out of all work done by day labor, detail survey work required in connection with studies for future work and office studies, and the acquiring of necessary field data and field inspection for special reports.

Work done under 28 contracts involved the construction of 3.78 miles of sewers at a cost of $229,525, as follows:

Of contracts awarded during the fiscal year 1922 and not completed during that year all were completed during the fiscal year 1923, as follows: O Street replacement sewer, in O Street NW., between First Street and New Jersey Avenue; Broad Branch trunk sewer, section 1, Nevada Avenue between Chappel Road and Lega-

tion Street; Monroe Street service sewer, between Eighteenth and Twentieth Streets; Stephenson Place service sewer, between Thirty-second Place and Utah Avenue NW.; Quesada Street service sewer, between Western Avenue and Broad Branch Road; M Street relief sewer, section 1, between Twentieth and Twenty-second Streets NW.; Seventeenth Street and Otis Street service sewer, in Seventeenth Street between Newton and Otis Streets NE., and in Otis Street between Fifteenth and Seventeenth Streets NE.; Allison Street and Eighteenth Street service sewer, in Allison Street between Blagden Avenue and Eighteenth Street NW., and in Eighteenth Street between Allison and Varnum Streets NW.; Indiana Avenue invert, section 1, Indiana Avenue NW., between First and Third Streets NW.

Of contracts chargeable to 1923 funds and awarded during 1923, the following were completed: Whittier Street and Fifth Street service sewer, in Whittier Street between Third and Fifth Streets NW., and in Fifth Street between Whittier and Aspen Streets NW.; service sewers for square south 1092, Commodore Barney Circle between Pennsylvania Avenue and Seventeenth Street SE., Kentucky Avenue between Commodore Barney Circle and H Street SE., and in Seventeenth Street between Commodore Barney Circle and H Street SE.; Twelfth Street service main, between Alaska Avenue and Holly Street NW.; Broad Branch trunk sewer, section 2, Nevada Avenue, NW., between Keokuk and Northampton Streets; Thirty-ninth Street trunk sewer, section 2, between Legation and Livingston Streets NW.; Livingston Street storm-water sewer, between Thirty-ninth and Forty-first Streets NW.; Massachusetts Avenue NW., service sewer, between Yuma and Albemarle Streets; special deep service sewer, Jackson Place NW., between Pennsylvania Avenue and H Street; Connecticut Avenue storm-water sewer, between Nebraska Avenue and Ingomar Street; Illinois Avenue trunk sewer, section 1, in Illinois Avenue between Webster and Allison Streets NW.; McKinley Street storm-water sewer, between Nevada Avenue and Thirty-seventh Street NW.; Brooks Street and Forty-seventh Street service sewer, Brooks Street, between Forty-fourth and Forty-seventh Streets NE., and Forty-seventh Street, between Brooks and Eads Streets NE.; Military Road service sewer, between Connecticut Avenue and Thirty-second Street extended.

In addition, progress was made during the year on the following 1923 contracts: Junction chamber between Florida Avenue and First Street trunk sewers, First and Florida Avenue NW.; M Street relief sewer, section 2, M Street, between Twentieth and Twenty-first Streets NW.; Summer Road service sewer, between Bolling Field and Nichols Avenue SE.; Warren Street service sewer, from Thirty-sixth and Yuma Streets to Wisconsin Avenue and Van Ness Streets NW.; Eye Street service sewer, between Second and Third Streets NW.; Conduit Road service sewer, betwen Jewett Street and Little Falls Road NW.

The following contracts, chargeable to 1923 were awarded but not started during the year: New invert, Indiana Avenue trunk sewer, section 2, from Third and D Streets to Fourth and E Streets NW.; Third Place service sewer, between L and M Streets NE.; Quesada Street service sewer, between Broad Branch Road and Thirty-third Street; Potomac Avenue and E Street service sewer, between Eighteenth Street and Potomac Avenue and Nineteenth and E Streets

SE.; C Street service sewer, between Seventeenth Street and Massachusetts Avenue SE.; M Street service sewer, between South Capitol and Van Streets SE.; McKinley Street storm-water sewer, section 2, McKinley Street, between Nevada Avenue and Thirty-seventh Street NW.

Contracts chargeable to both 1923 and 1924 funds awarded during the year but not started, were: Concrete invert, old Tiber sewer, section 5, in Canal Street SW., between C and South Capitol Streets; upper Potomac interceptor, section 5, between Aqueduct Bridge and Potomac Avenue extended.

The following contracts chargeable to 1924 funds were awarded, work not yet started: Falls Branch storm-water sewer, section 1, between River Road and Davenport Street and Wisconsin Avenue and Fessenden Street; Spring Road replacement trunk sewer, section 1, between Sixteenth and Thirteenth Streets NW.; Woodridge storm-water sewer, section 1, Eastern Avenue between Monroe and Newton Streets NW.; Rock Creek main interceptor, section 10, in Rock Creek Park.

Of the above, the only work done toward completing the system of interceptors of the sewage-disposal system was the awarding of contract for section 5 of the upper Potomac interceptor, work on which was not started.

The above contract work necessitated the preparation of 41 partial and final measurement sheets. Sewer construction under day labor required the staking out of over 12 miles of jobs. Over 26 miles of profiles were run and plotted in connection with office studies. As a permanent record of new construction, 199 detailed sheets were prepared and 183 plats were furnished the assessor showing in detail the location of new service sewer, and 2 plats were forwarded to the health officer indicating the location of new sewers where same abutted existing houses. Two hundred inspections and special reports were made on applications for the connection of area drains to separate system sewers. To eliminate the preliminary inspecton in these cases and the accompanying report, recommendation was made by this office to amend the Plumbing Code of the District to permit an agreement to be signed by owner of premises if desiring an area drain. This modification, collaborated in by the inspector of plumbing, is now being tried out, and in addition to the saving of time by this office and by the inspector of plumbing's office, will relieve the record room of filing and indexing some 200 applications each year.

SECTION OF DAY LABOR CONSTRUCTION.

[T. Lanigan, overseer, in charge.]

The work of this section covers the construction by District forces of all new and replacement sewers, all storm-water catch-basin work, and all repairs to the sewerage system.

During the fiscal year a total of 8.22 miles of pipe sewers were constructed under 332 jobs. The location of this sewer construction was distributed throughout the District as indicated below:

	Miles.
Within old city limits	6.29
County west of Rock Creek	1.99
County east of Rock Creek	3.71
County west of Anacostia River	1.80
County east of Anacostia River	.43

In addition to new sewer work, 108 storm-water catch basins were constructed during the year and 543 minor repair jobs were undertaken.

During the year four concrete-mixing machines were purchased for the four main construction gangs at a total cost of $1,270. Previous to the purchase of this equipment all concrete was mixed by hand, and from cost records since this innovation it is believed that, based on work done during the entire fiscal year, there would be a saving in the cost of mixing concrete alone of about $2,400. This reduced cost reflects a saving of from 3 to 10 cents per foot in the laying of pipe sewers. In an effort to still further reduce the cost of sewer construction the overhead has been slightly lowered by reducing the number of night watchmen by about 50 per cent.

The activities of this section are seriously handicapped by the provisions of the organic act of the District, requiring that day-labor work be confined to those jobs estimated to cost $1,000 or less. At the date of the passage of this act (June 11, 1878), owing to the then low cost of material and labor, it was possible to construct about 800 linear feet of sewer for $1,000, while at the present time but 200 feet of sewer can be laid for this sum, or about 25 per cent. To permit more elasticity in the functioning of this division, and coupled with the fact that construction appropriations for this division have increased from $20,000 in 1878 to $474,000 in 1923, it is believed desirable to have above organic act amended so as to permit the construction of sewers by day labor on work estimated to cost $5,000 or less.

SECTION OF CHIEF CLERK.

[J. H. Dick, computer, in charge.]

The work of this section covers the preparation of pay rolls, requisitions and vouchers, material and equipment accounting, cost keeping, and general records. In addition this section prepares monthly financial statements to permit of a study of available balances. It is necessary that a close watch be kept over the finances to prevent the forced lay off of employees toward the close of the fiscal year for lack of funds.

Inventory of material in the sewer division storehouse was taken and the annual inventory reports of expendable and nonexpendable material and equipment were forwarded, as were the quarterly reports of cost of operation, repair, and mileage of 18 motor vehicles charged to this division. In connection with the reclassification of Government employees returns were submitted covering the 57 statutory employees of the sewer division. Weekly reports covering day-labor and contract work performed, also daily reports showing the various activities of this division, were forwarded. A total of 66,169 reports and records were handled by this section.

Sick leave granted sewer division employees showed a reduction of 31 per cent over the previous year.

In accordance with act of Congress approved September 1, 1916, authorizing the Commissioners of the District of Columbia to enter into an agreement with the Washington Suburban Sanitary Commission with the view of providing for the connection of sewerage systems in the State of Maryland bordering the District of Columbia

SE.; C Street service sewer, between Seventeenth Street and Massachusetts Avenue SE.; M Street service sewer, between South Capitol and Van Streets SE.; McKinley Street storm-water sewer, section 2, McKinley Street, between Nevada Avenue and Thirty-seventh Street NW.

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with the system of said District, an agreement was prepared by this office and after approval by the commissioners was submitted to the commissioners of the Washington Suburban Sanitary District for their acceptance. No official reply to this agreement has as yet been received.

The work of this section covered the following expenditures from 1923 appropriations:

Cleaning and repairing sewers and basins	$80,000.00
Operation and maintenance of the sewage-pumping service	100,000.00
Main and pipe sewers and receiving basins	125,000.00
Suburban sewers	157,000.00
Assessment and permit sewers	150,000.00
Purchase or condemnation of rights of way	365.85
Upper Potomac interceptor	40,000.00
Miscellaneous appropriations	7,703.06
Miscellaneous trust-fund deposits	28,866.66
Contingent expenses	1,042.25
Total	689,977.82

SECTION OF OPERATION AND MAINTENANCE.

[H. Garner, inspector, in charge.]

The work of this section covers collecting rainfall data, recording flow in sewers, annual inspection of trunk sewers, inspection and maintenance of sewage regulators, sumps, and tide gates, cleaning storm-water outlets, gravel basins, and inverted siphons, investigating complaints, and cleaning and flushing basins and pipe sewers.

The data obtainable from the 4 automatic and 23 pot gauges in the District, distributed over 50 miles of area, and from the 104 cup gauges, installed in the sewers, is not sufficient for an intelligent study of run-off conditions and overcharging of sewers. It is believed that at a minimum at least 7 additional automatic rain gauges should be installed, and while but 5 additional cup gauges were installed during the year, it is proposed to install many more during 1924.

During the year there was an unusual number of storms of excessive precipitation:

July 3, maximum 5-minute rate, 6.34 inches per hour; total precipitation 1.08 inches.

July 13, maximum 5-minute rate, 4.44 inches per hour; total precipitation 3.37 inches.

July 18, maximum 5-minute rate, 4.68 inches per hour; total precipitation 1.02 inches.

July 19, maximum 5-minute rate, 3.96 inches per hour; total precipitation 1.51 inches.

August 19, maximum 5-minute rate, 5.28 inches per hour; total precipitation 1.25 inches.

September 2, maximum 5-minute rate, 4.08 inches per hour; total precipitation 5.16 inches.

April 28, maximum 5-minute rate, 1.44 inches per hour; total precipitation 1.40 inches.

The rain of July 13, 1922, is reported by the United States Weather Bureau as having registered a precipitation of 2.78 inches in one hour, the greatest precipitation in a similar length of time since July 5, 1905, when 2.79 inches of rain fell in one hour. The maximum precipitation during this storm, over a 5-minute period, was at

the rate of 4.44 inches per hour. All of the above storms resulted in a large number of the sewers in the city being overcharged, flooding the streets in the low areas and causing the water to back up in the basements of many houses. The storm of April 28, 1923, while not recorded as excessive in the city west of the Anacostia River, caused considerable damage to property and the loss of two lives east of the Anacostia River; however, in neither case of loss of life was the overcharging of sewers a contributing factor.

An inspection of the interior of 27 miles of trunk sewers resulted in the discovery of the need of some minor repairs but the principal defect brought to light was the great accumulation of silt, these deposits being 33 inches deep in one sewer and in several instances 30 inches deep, this silting up of sewers being a large contributing factor to the overcharging of trunk sewers. No funds were available during the year to permit removing this silt, but during the year 1924 it is the intention to make a beginning on this work in the hopes that future appropriations will permit its continuance on a larger scale until all sewers are clear of obstruction. Lack of funds prevented a comprehensive inspection of sewers, which inspection is deemed of extreme importance in the maintenance of a sewer system.

The 17 sewage regulators, 111 sumps, and 65 tide gates required 7,857 inspections, while to maintain a sanitary condition at storm-water outlets necessitated 104 cleanings. Inverted siphon under Rock Creek in the Zoological Park was cleaned twice.

There were 1,301 complaints requiring investigation during the year, the most common being obstructed catch basins, reported 292 times, and obstructed house laterals, reported to this office as obstructed sewers. The nature of complaints were varied, being public sewers obstructed, overcharged, or foul smelling; catch basins obstructed, overcharged, broken, or foul; manhole covers broken or giving forth odors; articles lost in sewers, etc. The work of this service is now handled by one inspector, but is increasing to such an extent that an assistant will soon be required.

A total of 23,082 catch basins were cleaned during the year. This is an average of four cleanings a year for each of the basins in the District. Seven thousand seven hundred and eighty cubic yards of silt were removed from these basins and carted away. On June 30, 1923, there were 5,883 catch basins requiring cleaning. This work has increased enormously in the last 10 years, at which date basins were cleaned every 30 days. With funds available for the current year, this activity will be partly motorized, but before this force can expect to render adequate service it will be necessary to enlarge the force and completely motorize it. In addition to cleaning basins, this force during the summer months did 287 miscellaneous cleaning jobs and flushed 14.804 catch basins to prevent offensive odors.

During the year 33.6 miles of pipe sewers and 96 basin connections were cleaned and 259 cubic yards of sand, gravel, and tree roots removed from same.

One thousand one hundred and forty-nine linear feet of pipe sewers were flushed with the view of removing obstructions. In 1913 a round of the sewers was made every 30 days, while at the present time, due to the growth of the city, with the consequent increase in length of sewers, it requires four months to make a round.

The fact that 86 sewers were obstructed this year bears testimony to the lack of necessary flushing, and the only remedy that can be suggested is sufficient appropriation to permit increasing this force from six to nine men and to provide motor transportation for work north of Florida Avenue to replace the present horse-drawn equipment.

In conjunction with the removal of snow from the street surfaces, on two occasions sewer manholes were made available by detailing inspectors to prevent congestion in same. Nine hundred and twenty-two cubic yards of snow were dumped into the sewers.

SECTION OF PUMPING SERVICE ENGINEERING.

[R. S. Chapin, assistant engineer, in charge.]

This section has pursued its routine work, keeping all records of performance at the main sewage pumping station up to date. A new graphic chart showing pumpage and coal consumption by watches was initiated and posted daily in the boiler room to give the watch engineers and firemen a ready reference as to their performance in comparison with previous days and in comparison with other watches. It is believed that this chart has contributed materially in the very appreciable coal saving effected during the year.

With the limited information available, a study was made of the heat losses in the furnaces. This study indicated a probable loss of 50 per cent of the total heat in the coal, whereas a plant of this type should lose but about 35 per cent. To determine more accurately the losses, purchases were made of a CO_2 recorder, an Orsat set for analyzing the flue gases, and recording thermometers for the flue gases and feed-water lines. To reduce the above losses it is proposed to coat the exterior of the boilers with an asbestos preparation and to alter the angles of the baffles, thus increasing the heat-absorbing surfaces of tubes over the gases at their hottest point. With these changes and from a more accurate determination of the losses from the installation of the new recording instruments it is confidently anticipated that the boiler losses will be materially lessened during the coming year.

The assistant engineer in charge of this section made inspection trips to the various steam plants in the city and acquired many valuable ideas looking toward economy.

The total pumpage at the various stations during the year was as follows:

	Gallons.
Main station	25,968,718,950
Poplar Point substation	721,841,896
Rock Creek substation	270,311,836
Woodridge substation	18,284,246

Eliminating Rock Creek and Woodridge substations, which deliver their discharge to the main station, the above shows a mean total daily pumpage of 73,124,816 gallons. This is about 14 per cent greater than the total water consumption of the District, attributable to infiltration of ground water and direct rainfall.

The rainfall during the past year amounted to 43.52 inches, as compared with 39.21 inches the previous year. The maximum tidal

range at the main station was 6.3 feet, 4.6 feet being recorded in a single day.

The river flow varied from a minimum of 1,263 second-feet on September 30, November 4, and December 4, 1922, to a maximum of 50,900 second-feet on April 16, 1923, with a mean flow throughout the year of 6,760 cubic feet a second.

During the 14-day period from September 4 to October 7 the mean flow was 1,492 second-feet. Assuming the population of the District to be 437,000, the large part of which contribute to the sewerage system, the dilution figure, expressed as flow in cubic feet per minute per thousand of population, becomes 205.

SECTION OF MASTER MECHANIC.

[F. K. Steele, principal steam engineer, in charge.]

The duties of this section consist in the maintenance and operation of the steam-driven main sewerage pumping station and the three electric-driven substations. In connection with the maintenance and operation of these stations this section maintains a machine shop and a blacksmith shop, and in addition to the operation force employs electricians, steamfitters, screen operators, cleaners, and general-utility men—a total force of 52.

During the year this section undertook the preparation of materials for a revised arrangement for roping Pennsylvania Avenue for parades, involving some 35,000 feet of cable and 1,200 posts.

The following equipment was thoroughly overhauled: Steam ventilating fan, two generator condenser pumps, steam drainage pump, one boiler feed water pump, shearing and cutting machine, boiler tube cleaner and pressure pump, swinger for gasoline derrick, gasoline engine on marine railway, and completed 1,717 jobs of general repair and replacement.

During the year there was purchased a Sturtevant electric fan of 24,000 cubic feet a minute capacity to replace the present steam-driven installation.

The difficulty experienced last year with rapid burning out of grate bar fingers has been greatly relieved by the installation of steam jets under the grates.

The policy of granting the operating force a day off in every 10 was continued throughout the year.

Protective gratings were installed at the open ends of Piney Branch trunk sewer and Arizona Avenue sewer and two at the Eleventh and Randolph Streets entrance to Brookland trunk sewer.

Poplar Point and Rock Creek substations were screened and a coal furnace installed in Rock Creek substation to replace the gas installation. This change will bring about a saving of $45 a month during the winter months.

The total coal consumed at the main sewerage pumping station during the fiscal year was 3,986 tons. Coal on hand July 1, 1922, 690 tons; coal received during the fiscal year, 4,738 tons; balance on hand June 30, 1923, 1,442 tons. Value of coal purchased, $38,889.23; value of coal used, $32,725.06.

Four hundred and seventy tons of débris were removed from the screens, pressed and incinerated, and 20 tons of floating débris removed from the skimming tank and incinerated.

During the fiscal year, 2,290 cubic yards of silt were removed from the sediment chamber at the main station and 114 yards from Poplar Point substation.

At the main station there are many needs in the line of replacements and betterments, but probably the most urgent need is for motor transportation for the head of the section to enable him to make more frequent and thorough inspections of the substations.

SECTION OF SHOPS AND YARDS.

[W. M. Byrnes, assistant engineer, in charge.]

The work of this section covers the care of greenhouse and lawns, the manufacture of basin tops, the field blacksmith shop, automobile repair shop, paint shop, carpenter shop, and the removal of waste from the sewerage system by water to point of disposal. It also has charge of the rolling stock and floating equipment, including marine railway, and such stock of material as it is necessary to carry in this division.

For inclusion in the sewer system, there was constructed under this section 222 catch-basin tops, with the necessary drip stones and cheek blocks, at a cost of $11.27 per basin.

The field blacksmith shop made 20 cup gauges for installation in sewers, 2,125 manhole irons at a saving of 2.75 cents each on the lowest open-market bid, did 125 repair jobs on rolling stock, reconditioned 49 basin-cleaning tanks, ironed 1 auto truck body, made repairs on 25 automobiles, and kept in condition all construction tools.

The paint shop repainted 14 pieces of rolling stock, painted 3 rowboats, 4 auto trucks, 3 scows, dredge and towboat, pipes under M and P Street bridges, and finished 212 routine jobs.

The auto repair shop put three cars in service and two out of service, rebuilt two 1-ton trucks and one 2-ton truck, assembled two engines and four rear ends, built one body for a 2-ton truck, kept 18 automobiles in repair, and did repair work on miscellaneous gasoline equipment.

At the end of the fiscal year the division was using 36 animals and 27 animal-drawn vehicles. The purchase of 8 motor vehicles, authorized under present appropriation, will replace 26 of these animals and 16 vehicles, to the great advantage of both economy and efficiency. It is very important that motorization be continued until all services which can be more economically and efficiently handled in this way have been motorized.

The carpenter shop built all construction forms for use in connection with trunk sewers built by day labor. The tugboat and four scows were repaired, a new dock adjacent to the marine railway was built, two new rowboats were built and one repaired, and all carpentry work on the new garage completed, and 183 miscellaneous jobs performed.

Rentals received on dredge, marine railway, and pumps amounted to $1,110.01, enough to keep this equipment in repair and buy material for an auxiliary towing launch. Three sections of a new garage were built to better house the motor equipment, and material purchased for a new scow.

SECTION OF UNDERGROUND CONSTRUCTION, PUBLIC SERVICE CORPORATIONS.

[A. G. Dunn, assistant engineer, in charge.]

The work assigned this section involves detailed determination of locations for new extensions of gas mains, electric, telephone, and telegraph conduits, with their accessories, as well as supervision of the work done under permits therefor, and the accurate location of all work. Application for this new construction require careful location studies, so as to avoid interference with existing and future construction, and particularly to assure economical and orderly occupation of public space along predetermined systematic lines. During construction the work is regularly inspected, compliance with the terms of the permit is insisted upon, and an accurate record of locations made from field measurements. Record sheets are prepared showing the work in detail, and the work is then plotted on record maps and recorded by card system.

The work of the year may be summarized as follows:

Permits prepared upon application		3,082
New jobs inspected and recorded		2,580
Inspections of work under construction		5,309
Gas mains laid	miles	13.88
Electric conduit laid	do	103.84
Telephone conduit laid	do	14.23
Traction conduit laid	do	.92
Manholes constructed		1,741
Houses connected with electric conduits		3,001
Houses connected with gas mains		1,676

In addition to the current work of the year, 12 new 50-foot scale maps were made and many old maps repaired.

In advance of all proposed surface work, a study is made of existing and needed conduits and mains, and where considered advisable recommendations are made to the Public Utilities Commission that the respective corporations be required to install same.

Following is a statement of the amounts charged each of the several public corporations for supervision and inspection on account of underground construction during the fiscal year:

Potomac Electric Power Co	$2,578.42
Chesapeake & Potomac Telephone Co	1,666.68
Washington Gas Light Co	1,140.06
Georgetown Gas Light Co	409.86
Capitol Traction Co	99.60
Total	5,894.62

The greatest need of this section is additional transportation, in order to make proper inspections before preparing permits and to have a vehicle ready for emergency inspections, which service is not always met under present conditions.

J. B. Gordon,
Sanitary Engineer.

The Assistant Engineer Commissioner.

REPORT OF THE MUNICIPAL GARAGE.

WASHINGTON, D. C., *August 23, 1923.*

SIR: I have the honor to submit the following report on the municipal garage for the fiscal year ended June 30, 1923:

The municipal garage was kept open at all times, night and day, for urgent and necessary transportation.

The labor and mechanical force consisted of eight men, whose duties were repairing automobiles, carrying mail from the city post office to the District Building, and driving for departments having no automobiles or drivers.

There were 44 automobiles maintained and kept in running order for the various departments of the District government. All machines were supplied with oil and gasoline and were washed by the night force, which force also acted as watchmen.

On the evening of February 27, 1923, a fire started in some oily waste in the storeroom. The blaze was confined to the storeroom alone, only a small amount of damage to the shelving and lighting system being done. Since the fire the wiring has been placed in conduits. The office and storeroom have been painted throughout.

Owing to the crowded condition of the garage, we experienced difficulty in locating the main source of the fire, and it is recommended that immediate steps be taken to relieve this congestion.

The total operating expense for the maintenance of the 44 automobiles, including gas, oil, tires, labor, and miscellaneous supplies amounts to $18,038.64, or an average of $409.96 for each car, or $0.0731 per mile. The average mileage per car was 5,902.3 miles.

The garage was constructed in 1917 for the accommodation of approximately 25 automobiles, sufficient floor space being allowed for the necessary repair work and cleaning of cars. Additional cars purchased during the last six years has increased the number of cars in the garage to 44, necessitating the storage of cars over night in the aisles. Seven of these cars are being stored at various places throughout the city, which is objectionable to the other departments housing these cars over night. Due to the crowded condition of the garage, it is very difficult for the night force to wash and supply gasoline to the cars.

C. N. EMMONS,
Superintendent Municipal Garage.
E. P. BROOKE,
In Charge.

To the ASSISTANT ENGINEER COMMISSIONER.

REPORT OF BOARD ON OILS AND LUBRICANTS.

WASHINGTON, D. C., *September 7, 1923.*

SIR: We have the honor to submit the following report as to the operations of the permanent board on oils and lubricants for the fiscal year ended June 30, 1923.

Advice solicited from all users of oils and lubricants in the District service concerning the satisfaction being received from products purchased under current contract brought favorable reports in prac-

tically all cases, showing the general approval of the products recommended by the board.

The purpose of the oil board is to solicit bids for all oils and lubricants needed by the District of Columbia Government, and to recommend for acceptance by the commissioners the products which will be most advantageous to the District both as to price and service requirements. Accordingly, proposals were circulated March 1, 1923, and bids opened April 2, 1923, for furnishing and delivering oils and lubricants considered necessary to meet the needs for the fiscal year 1924.

The lowest bid in each case, complying with specifications, was recommended by the board for acceptance, except in certain instances where full explanation accompanied. Some irregular bids were rejected. Products previously under contract and which failed were rejected, and bids which were considered unreasonable or unsatisfactory for some specific reason were rejected and readvertised.

Bids for furnishing products during the fiscal year 1924 showed a close comparison in price with those for the previous fiscal year, except in the case of gasoline automobile oils. These oils showed a reduction of from 5 per cent to 20 per cent over previous contract prices.

Careful consideration was given each and every bid submitted, and the board was governed by the results of experience and use, with the proper thought of the service requirements of the products in question.

Upon recommendation of the oil board contracts were entered into by the commissioners during the month of June, 1923, for furnishing the estimated amount of oils and lubricants needed for the fiscal year 1924, except in a few cases where either no bids were received or contract was not deemed advisable to the best interest of the District of Columbia.

The following summary shows the approximate amounts of oils and lubricants used during the fiscal year 1923, together with the range of prices paid:

Kind.	Approximate amount used.	Price range.
Steam-engine oil	9,400 gallons	19½ to 56 cents per gallon.
Gas engine oil	17,700 gallons	24½ to 65 cents per gallon.
Lubricants, differential and transmission	12,400 pounds	5 to 15 cents per pound.
Machine oils and grease	7,000 pounds	2½ to 19½ cents per pound.
Petroleums	24,000 gallons	10 to 11 cents per gallon.
Fuel oils (including gasoline)	240,000 gallons	6 to 22½ cents per gallon.
Miscellaneous oils	10,000 gallons	13 to 30 cents per gallon.
Miscellaneous greases	6,000 pounds	3 to 9 cents per pound.

Respectfully submitted.

J. E. WOOD, *Chairman*,
J. S. GARLAND,
O. E. FEARN,
Permanent Board on Oils and Lubricants,
District of Columbia.

To the ENGINEER COMMISSIONER.

REPORT OF BOARD FOR THE CONDEMNATION OF INSANITARY BUILDINGS.

AUGUST 1, 1923.

GENTLEMEN: We have the honor to submit the following report for the year ended June 30, 1923—buildings on which action was taken in response to notices served under the act creating the Board for the Condemnation of Insanitary Buildings during the year ended June 30, 1923:

Report for year ended June 30, 1923.

	Examined.	Demolished.	Repaired.	No action necessary.	Value of repairs.
Buildings in streets	229	94	96	87	$32,775
Buildings in alleys	331	62	6	175	600
Total	550	156	102	262	33,375

Buildings acted upon since creation of board to June 30, 1923.

Buildings in streets:	
Examined	4,134
Demolished	1,873
Repaired	1,452
No action necessary	665
Value of repairs	$218,040
Total number of board meetings held during the year ended June 30, 1923	19
Number of 20-day preliminary notices served during year ended June 30, 1923	117
Number of condemnation notices served during year ended June 30, 1923	63
Number of condemnation cards affixed to buildings during year ended June 30, 1923	62
Number of condemnation notices served under sec. 16 of Building Code	65
Estimated number of tenants required to secure other living quarters through action of board for year ended June 30, 1923	1,145
Estimated number of tenants benefited by repairs for the year ended June 30, 1923	612
Estimated value of repairs required through action of board for the year ended June 30, 1923	$33,375
Estimated value or repairs required through the board from July 1st, 1917 to June 30, 1923	$247,995

A survey has been made during the year ended June 30, 1923, of all the alleys in the District on which dwellings are located. A census of the population was taken and the buildings examined and the following data obtained:

Total number of alley dwellings	2,544
Total number of alley dwellings dilapidated	247
Total number of alley dwellings vacant	68
Total number of alley inhabitants	9,198
Total number of white people	507

Total number of colored people 8,691
Approximate value of alley dwellings $1,272,000

R. A. WHEELER,
Major, Corps of Engineers, U. S. Army,
Assistant to the Engineer Commissioner, District of Columbia.

W. C. FOWLER, M. D.,
Health Officer, District of Columbia.

JOHN P. HEALY,
Inspector of Buildings, District of Columbia,
Board for the Condemnation of Insanitary Buildings,
District of Columbia.

To the COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

REPORT OF THE BOARD OF EXAMINERS OF STEAM ENGINEERS.

WASHINGTON, D. C., *August 6, 1923.*

GENTLEMEN: The board of examiners of steam engineers have the honor to submit to you the report for the year ending June 30, 1923. The following table shows the work as it progressed during each month:

	Meetings held.	Applicants received.	Applicants approved.	Applicants not competent.	First class.	Second class.	Third class.	Gas fired for pressing machines.	Special class.	Steam automobiles.
1922										
July	4	14	4	10	0	0	2	1	1	0
August	4	15	8	7	0	0	4	4	0	0
September	5	33	17	16	0	0	3	10	3	1
October	4	13	7	6	0	0	1	2	4	0
November	4	24	18	6	2	1	4	6	4	1
December	5	16	7	9	0	0	1	3	3	0
1923										
January	4	17	9	8	1	1	3	2	1	1
February	4	17	12	5	3	1	6	1	1	0
March	5	33	21	12	0	3	7	9	1	1
April	4	29	16	13	0	0	8	8	0	0
May	4	32	18	14	2	1	4	6	4	1
June	5	19	6	13	0	0	1	3	2	0
	52	262	143	119	8	7	44	55	24	5

Respectfully submitted.

E. F. VERMILLION,
H. BOESCH,
Board of Examiners of Steam Engineers.

To the COMMISSIONERS OF THE DISTRICT OF COLUMBIA.

REPORT OF THE WHARF COMMITTEE.

WASHINGTON, *August 30, 1923.*

SIR: The wharf committee has the honor to submit the following report for the fis al year ended June 30, 1923:

A statement showing the water frontage under the control of the commissioners and a list of wharf property under lease as of August 1, 1923, are on file in this office.

The leases of the Washington-Colonial Beach Steamboat Co., the Mt. Vernon & Marshall Hall Steamboat Co., Johnson & Wimsatt, Capital Yacht Club, A. M. Suit, and the Cranford Paving Co. expired during the year. New leases were entered into with the same tenants in each case with the exception of A. M. Suit. Part of the property covered by this lease was turned over to the Sea Scout organization of the Boy Scouts of America, while the remainder was leased to Judge Daniel Thew Wright.

Wharf rentals are fixed by the commissioners upon the advice of the assessor as to the value of the property.

The total frontage of wharf property on the city side of the Washington Channel is 9,275 linear feet, of which slightly over one-half is under Federal jurisdiction. The frontage on Water Street between the south curb line of N Street south and Thirteenth Street west is under the control of the Commissioners of the District of Columbia and is used and occupied by the municipal fish market and wharves, the District of Columbia morgue, the harbor precinct, the District of Columbia fireboat, and the workhouse and sand wharves, all of which are municipal activities, and also by lumber merchants, wood yards, marine railways, boathouses, and various steamboat companies operating passenger and freight steamers.

The water front along the Georgetown Channel is under private control, with the exception of the termini of streets. The terminus of Thirty-first Street is leased by the Cranford Co.

Along the Anacostia River the United States Navy Yard occupies the frontage on the city side between Second and Eleventh Streets. The sewage pumping station and yard occupies the frontage between First and Second Streets. The intake of the Capitol power plant is located at the foot of First Street. The only frontage along the Anacostia River that is leased is that between the building lines of Q Street SE., where the Standard Oil Co. has a pipe line.

The total revenue from wharf rentals amounted to $34,011.38.

The surveyor, at the request of the wharf committee, has made and furnished surveys of the various parcels of wharf property under lease.

The elimination of unsightly sheds and buildings along the water front as leases expired was continued.

The wharf committee desires to call particular attention to the very attractive club house recently erected by the Capital Yacht Club immediately south of the fish market, and to the fact that the new head house in course of erection at Wharf No. 6 will provide suitable quarters for the harbor precinct and will make it possible to demolish the existing dilapidated buildings now housing that precinct.

Motorized trucking has displaced the river freight steamer as a factor in transporting commodities from the tidewater counties of Maryland and Virginia.

The wharf committee is of the opinion that the development and improvement of the water front along the Washington Channel of the Potomac River between Washington Barracks and Fourteenth Street SW. should be no longer delayed. It is obvious to anyone who has seen our water front that existing conditions are deplorable. Many of the old timber wharves and sheds are in a rotten and dilapidated condition.

A more noteworthy project than one which would give the National Capital a useful and attractive water front could not be initiated. Civic organizations, municipal officials, and others have been advocating an improvement in Washington's water front for many years, and notwithstanding the announced policy of economy in governmental expenditures it is believed that appropriations for this purpose should be made progressively each year until the project has been completed.

Municipal officials have not been unmindful of the importance of this project. Capt. John E. Wood, assistant to the engineer commissioner, has prepared a tentative plan for the development and improvement of the water front along the city side of the Washington Channel. The general features of this plan have been approved by the Commission of Fine Arts, but no doubt some revision must be made before it can be adopted as an approved project. The plan should be carefully studied by some eminent authority on harbor and water-front development and funds secured from Congress for such service.

In developing the plan preparatory to its transmission to the Chief of Engineers and to Congress for approval full recognition should be given to the interests of navigation and commerce, as well as to the esthetic viewpoint.

The municipal fish market, the new club house of the Capital Yacht Club, the structures occupied by the Norfolk & Washington Steamboat Co., the new concrete wharf and head house on Water Street between M and N Streets, the Naval Militia armory, and perhaps the wharf of the Bureau of Lighthouses, representing in all an investment of approximately $500,000, should be retained in any scheme of development.

If it be decided to construct a quay extending to the existing pierhead line and to fill in all slips, adequate provision should be made for the protection of small boats by the establishment of several small basins or indentations. Provision should also be made for one or two marine railways—one at the Capital Yacht Club and another at the foot of Ninth or Thirteenth Streets.

Ample property in public ownership is available for the widening of Water Street SW. for the establishment of a connecting boulevard or driveway between Washington Barracks and East Potomac Park by way of a new bridge at the foot of Fourteenth Street.

One part of the District of Columbia having great potentialities for park development is the section bounded by Washington Barracks, the Anacostia River, and P Street, popularly known as Buzzards Point. This property is now zoned for commercial and industrial uses, but some doubt has been expressed as to whether or not industry will ever utilize this water frontage.

Respectfully submitted.

ROLAND M. BRENNAN,
Chairman.
RUSSELL DEAN,
D. E. MCCOMB,
Wharf Committee.

To the ENGINEER COMMISSIONER.

REPORT OF SUPERINTENDENT OF THE DISTRICT BUILDING.

WASHINGTON, D. C., *August 20, 1923.*

SIR: I have the honor to submit my report on the maintenance and care of the District Building, including the operation of its various units, for the fiscal year ended June 30, 1923.

POWER PLANT.

There were consumed 2,017 tons of coal, which averaged 13.8 per cent ash. There were 537 cubic yards of ashes removed, at a cost of $267.81. The total number of kilowatt hours generated was 485,740; of this there were used for lighting 340,990, for elevators 51,150, and for motors 93,600 kilowatt hours. The pneumatic tube system was in operation 2,185 hours, the heating system 4,659 hours, the ventilating system 1,257 hours, and the cooling system 2,420 hours. Repairs made in this department included the rebuilding of two smoke-consuming arches in No. 2 and No. 4 furnaces, the rebuilding of No. 2 stoker, which included the installation of a new set of grate bars, thereby changing the grate carrier from the roller to the slide type. All stokers have now been changed from the roller to the slide type, which should double the life of the grate bars and eliminate the frequent breaking down of the stokers. Boiler blow-down valves were all equipped with new seats and disks. One new turbine head and two sets of pins and cutters for boring boiler tubes were purchased. Two new Sangamo wattmeters, one 400 and one 600 amperes, were purchased, the old ones having completely worn out. Minor repairs were made to the plumbing and to other equipment. It is recommended that a new air compressor for use in connection with our pneumatic tube system be purchased at an approximate cost of $1,200; the one now in use has been in operation for 12 years and a breakdown is possible at any moment; should this occur, it would automatically throw out of commission our entire tube system.

ELECTRICAL DEPARTMENT.

The usual routine work incident to the care of elevators and electrical equipment was performed by this department. The drum counterweight cables were renewed on 6 passenger elevators, armatures on three of the motors were repaired and rewound, 8 desk lamps were installed in various offices, 24 lighting fixtures were changed to meet the requirements of the departments, 14 fans were installed. Many of our tablet boards are practically burnt out and should be replaced with new ones; continued use of them in their present condition is dangerous. The signal system on the passenger elevators is continually in need of repair, having given 15 years of service; the approximate life of this system is 10 years. Fans are greatly needed for clearing the elevators of impure air, particularly during the summer months.

Electric current used by the various departments for other than lighting was as follows:

	Kilowatt-hours.
Police department	5,200
Health department	35,000
Electrical department	6,672
Fire-alarm headquarters	6,854

PRINT SHOP.

In this department there were 1,969,541 pieces of printed matter, 2,771 pads, and 750 calendars completed at a cost of $7,547.51 for departments of the District government. This work was done at a minimum charge, which no doubt meant quite a saving to the Government.

BLUE PRINT AND PHOTOGRAPH SHOP.

There were 88,533 square feet of blue printing completed at a cost of $1,854.32 and 404 photographs at a cost of $1,036.98. There was purchased a washer and dryer, for use in connection with our "Pease" blue print machine, at a cost of $600.

WOODWORK AND PAINT SHOP.

This department has done all general repair work in the District building, including repairs to windows, doors, locks, repainting walls and ceilings and refinishing floors; in all approximately 27 rooms were repainted during the past fiscal year.

It is again recommended that additional floor space be acquired either by building an addition to the District building or the acquisition of adjacent property in order to relieve the congestion in the offices, which are greatly handicapped for lack of space.

JOHN E. WOOD,
Captain, Corps of Engineers, United States Army,
Superintendent.

E. P. BROOKE,
Assistant Superintendent.

The COMMISSIONERS OF THE DISTRICT OF COLUMBIA
(through the Engineer Commissioner).

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